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South India of Venkatanatha's Days

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An inquisitive reader of the present day desirous of knowing something of South India of the 14th century has only to look up the first chapter of Venkatanatha's Hamsasandesa to gain amply by the perusal. The poem is an imitation of Kalidasa's Meghaduta and attempts to portray that love-lorn condition so cleverly discribed by Kalidasa

> "Ne'er yet was lover could discriminate
> 'Twixt life and lifeless things in his love-blinded state"
> —*A. W. Rider.*

the overpowering sway of which even Rama did not escape and went to the extent of asking a swan to carry tidings of his welfare to sorrowful Sita in Lanka. The route that Rama describes to the swan as leading to Lanka carries one through various territories and shrines, mountains and rivers. The shrines described, though of a later origin, are remarkable in giving us an insight of the country of the poet's own time. The absence of the description of famous Sivite shrines may perhaps be due to his zeal as a Vaishnavite.

The powerful empire of Vijianagar that crippled the petty powers of the south had its seat of Government at Hampi the very place where once Rama had shed many a tear of sorrow for his beloved wife. This coincidence is very happy especially when it is possible to interpret the poet's desire to glorify the one noted power of his day making its capital the starting point of the swan on its journey to the south.

Rama stationed as he was in the territory about the mountain Malyavan[1] which corresponds to modern Hampi mentions two routes leading to the south, the one by the west coast and the other by the east coast.[2] The former route though nearer and better is not considered good because of the great rainfall in that territory whose proximity to the Sahya mountain is cleverly suggested by the poet.[3] The abundance of rainfall in the west coast is very well known to students of Indian Geography. The eastern route affords many beautiful sights in almost every territory.[4] It goes without saying that the rainfall in the east is much less than in the west. Starting from Hampi and going in a south-easterly direction tbe swan has necessarily to pass through lands divided variously by forests, streams and mountains.[5] The poet here talks of simple country women singing songs while sitting in paddy fields under the shade of sugarcane plantations.[6] The idea though copied from Kalidasa is very true of South India which abounds in paddy fields and sugarcane. One noteworthy fact in the verse is the mention of bilingual songs. In the territory near about Hampi we have both Karnataka, modern Canarese and Andhra. No wonder the simple women sang songs of a mixed type.

Proceeding the swan would sight Anjanadri i.e. Tirupati Hill which the poet fancies as being believed by pilgrims to be the snake Sesha by its being the abode of Vishnu and a supposed supporter of the world.[7] Added to this its peaks are gem-decked and

1. माल्यवानेष शैलः sl. 17.
2. मार्गौ सम्यक्कमम हनुमता वर्णितौ द्वौ,
3. तयोस्ते सह्यासन्नोप्यनघसुभगः पश्चिमो नित्यवर्षः । sl. 18
4. प्राचीनेषु प्रतिजनपदं संहतावद्भुतानां मन्नादृष्टिः कथमपि सखे मत्कृते ते निवार्या ॥ sl. 18
5. देशानेतान्वनगिरिनदीसंविभक्तान्व्यतीयाः ॥ sl. 19
6. इक्षुच्छाये किसलयमयं तल्पमातस्थुषीणां
सल्लापै स्तैर्मुदितमनसां शालिसंरक्षिकाणाम् ।
कर्णाटान्ध्रव्यतिकरवशात्कर्बुरे गीतिभेदे
मुह्यन्तीनां मदनकलुषं मौग्ध्यमास्वादयेथाः ॥ sl. 20
7. विष्णोर्वासाद्घनिवहनाद्भूरत्नैः शिरोभिः
शेषःसाक्षादयमिति जनैः सम्यगुन्नीयमानः ।
अभ्रैर्युक्तोऽलघुभिरचिरोन्मुक्तनिर्मोककल्पै
रग्रेभावी तदनु नयने रञ्जयन्नञ्जनाद्रिः ॥ sl. 21

the light clouds that cluster around them appear like the cast off slough of a snake and confirms the idea of the visitors. It is interesting here to note the description of the hill in 'Indian Architecture'. "If only one closely watches the hill range as he travels by a road or by train to Tirupati, he can see the hill of Venkatadri lying like a serpent; the quartzite rock cliffs nearest the top of the hills stand almost perpendicular and steep and look peculiarly the body of a serpent. In consequence of this we find that the place is mentioned in the ancient literature as well as in inscriptions, as Vengadam, and the country close by as Vengada Kottam. The sacred hills contain seven peaks, which are said to represent the seven hoods of Adi-Sesha, the divine serpent who is supposed to be petrified here. Over the hood is the temple of Sri Venkatachalapati and the mountain range is continuous like the body of a serpent stretched along for a considerable distance."

To the south and very near the Anjanadri is to be seen the river Swarnamukhi with its sands perceptible and imperceptible with retreating and oncoming ripples.[8] The poet says that the river carries the flowers falling from the forest trees on its banks to worship Siva with her hands of waves.[9] The Siva referred to is Kalahastisvara whose temple is located on the banks of the river twenty two miles off Tirupati. The breezes wafted by the river are described as fragrant with the smell of Vanira flowers[10] and the country thereabouts is stated as inhabited by Kiratas or hunters who lived by catching birds.[11]

The territory mentioned as coming next is Tundiramandala which is known in the vernacular as Tondai Mandalam. In that territory is situated the famous city of Canchi.[12] Here God Varadaraja is stated to have stopped the current of a river called Vegavati in which form Saraswati desired to spoil the sacrifice

8. स्तोकोन्मग्नस्फुरितपुलिनां त्वन्निवासेच्छयेव द्रक्ष्यस्यारात्कनक मुखरीं दक्षिणामञ्जनाद्रेः । sl. 23
9. आसन्नानां वनविटपिनां वीचिहस्तैः प्रसूनान्यर्चाहेतो रुपहरति या नूनमर्धेन्दुमौलेः ॥ sl. 23
10. मन्दाधूतः पुलिनपवनैर्मञ्जुलामोदगर्भैः । sl. 24
11. बन्दीकुर्युस्तटवसतयो माभवन्तं किराताः ॥ sl. 24
12. तुण्डीराख्यं तदनु महितं मण्डलं वीक्षमाणः क्षेत्रं यायाः क्षपित दुरितं तत्रसत्यव्रताख्यम् । sl. 25

performed there by Brahma having Savitri as patni.[13] Venkatadhwari Kavi who lived about the seventeenth century says that the river flowed to the south of Canchi.[14] Though the river has now disappeared, its previous existence is clearly proved by the stratum that is seen to-day in the form of a dirty brooklet close to which there is a cremation ground.

The greatness of Canchi cannot be overrated. Venkatanatha by a clever pun on the words appropriately calls it the invaluable gemdecked and musical girdle, a fitting jewel of Bhudevi.[15] From the plain meaning of the verse we gather that the town was abounding in wealth, trade in precious stones being vigorous, and that music was practised with great assiduity. It is not music alone. Perhaps it was that particular art which was cultivated more in the poet's days in that place. Canchi was once one of the most famous of India's centres of learning.

God Varadaraja is here described as dwelling on Hastisaila or the elephant mountain which form was taken as tradition reports by the Gajendra out of gratitude, when rescued by Vishnu.[16] This fact is made clear by a sight of Varadaraja's temple. The shrine of the God is situated on a fairly elevated ground with steps leading up to it. This rocky elevated mound is considered to be the petrified elephant, though later centuries produced skilled workmen to cut it symmetrically and beautify it. Another story about the Hastisaila is that it is the sacrificial altar of Brahma from which arose Vishnu to check Saraswati.[17]

Not very far from the temple of Varadaraja is situated the shrine of Siva who goes by the name Ekambaresvara. The poet makes Rama speak to the swan picturing to it the beauty of the lotuses and the fragrance of the breeze in the large tank called Kampa situated to the west of the temple in the midst of mango

13. पत्यौ रोषात्सलिलवपुषो यत्र वाग्देवतायाः सेतुर्जज्ञे सकलजगता मेकसेतुस्सदेवः ॥ sl. 25.

14. नगरीमेनां दक्षिणेन करुणाक्षरीव भगवतो वेगवतीनाम प्रवहति पावनी शैवलिनी । Visvagunadarsa, Canchivarnana.

15. नानारत्नैरुपचितगुणां नित्यसंगीतनाद्रां भूमेर्द्रक्ष्यस्युचितविभवं भूषणं तत्र कांचीम् । sl. 26

16. यस्यां नित्यं निहितनयनो हस्तिशैलाधिवासी द्वन्द्वातीतस्स खलु पुरुषो दृश्यते सत्यकामः ॥ sl. 26

17. तस्यास्तीरे सरसिजभुवस्सौम्य वैतानवेदिः दिव्यं कुर्वन्द्रविडविषयं दृश्यतेहस्तिशैलः । sl. 31

groves.[18] This Kampa is considered to be one of the seven branches of the river Vegavati which is spoken of as flowing through the middle of the town.[19] The river might have flowed through the town in the time of the poet but now it has almost disappeared. Kampa is now no more than a big lake. The poet compares the seven branches of the river to the seven series of letters—Gutterals, palatals etc.

Situated further south is the Chola land abounding in areca-nut trees.[20] This country is variously divided by many branches of the Kaveri which flows from the Sahya mountain (modern Western Ghats).[21] The fertile nature of the southern soil is easily accounted for by the irrigable nature of the river. Crocodiles are referred to as the important inhabitants of its waters.[22] The women of the place delighting in oscillating on the swing create a twilight with the vermilion tinge of the scented saffron in their braids of hair the black darkness of which combated with the white moon-light of arecanut flowers worn as an adornment.[23] The poetic way of putting that the arecanut flowers were used freely for decorating the hair is true to some extent even to-day where many of the old fashioned women in the rural south adorn themselves thus.

The next to call our attention is the western Chola territory called Varsha.[24] This country is well irrigated by rivers and boasts

18. मन्दाधूतस्तदनु महितो निस्सृतश्चूतषण्डात्
पार्श्वे तस्याः पशुपतिशिरश्चन्द्रनीहारवाही ।
दूरात्प्राप्तं प्रियसखमिव त्वामुपैष्यत्यवश्यं
कम्पापाथः कमलवनिकाकामुको गन्धवाहः ॥ sl. 28

19. वर्णस्तोमैरिव परिणता सप्तभेदैर्महौघैर्मान्या मध्येनगरमभित
स्सेविता देवताभिः ॥ sl. 29

20. जातप्रीतिर्जनपदमथो मध्यमं लंघयित्वा दूराल्लक्ष्यक्रमुकनिवह-
श्यामलान्याहि चोलान् । sl. 36

21. प्रत्युद्गच्छन्मकरवलनस्तंभितै स्सह्यजाया स्स्रोतोभेदैर्विविधगति-
भिस्सविभक्तावकाशान् ॥ sl. 36

22. प्रत्युद्गच्छन्मकरवलनस्तंभितैस्सह्यजायाः । sl. 36

23. संध्यारागं सुरभिरजनी संभवैरङ्गरागैः केशैर्ज्योत्स्नातिमिरकलहं
पालिकापीडगर्भैः । आबिभ्राणास्सरसिजदृशो हंसडोलाधिरोहादा
धास्यन्ते मदकलगिरस्तेषु नेत्रोत्सवं ते ॥ sl. 37

24. पृथ्वी लीलातिलकसुभगं पश्चिमं मार्गमेषां नाम्नावर्षे जलचरनदी
मातृकं गाहमानः । sl. 38

of a hill known as the white mountain with Vishnu's temple on the top.[25] This portion of the Chola kingdom should be about the meeting place of the borders of Salem, Trichy and Coimbatore Districts. The Kaveri and Coleroon are enough to make the land quite fertile. Ten miles north of Srirangam there is Tiruvellarai where there is the Swetagiri. In the catalogue of the 108 Vaishnava holy places or Nuttetu Tirupati Tiruvellarai is mentioned. In his book "South Indian Shrines" Mr. Jagadisa Iyer mentions this place as one of the 108 Vaishnavite holy places and as the birth place of Uyyakonda. God appeared here on the Swetagiri for the Goddess Earth and King Sibi.[26] About this place the growth of indigo is said to be abundant and wild, the forests there abounding in that species of trees.[27] Areca-nut palms are equally plentiful.[28] Here flows the river Kaveri acting as a boundary to the territories there carrying in its active current pearls falling from the ripe sugarcane breaking in its joints.[29] The idea of pearls falling from the joints of the sugarcane is common in Sanskrit literature and we are sure that there are no such pearls being carried by the current of the river. The only grain of truth in this statement is seen in our experience of the abundance of the sugarcane in the Kaveri plains. Smiling sweetly at day-break by the fall of nut flowers and perfumed by their honey the river is poetically pictured as being led gently from the lap of the Sahyadri to the Ocean after receiving the auspicious blessings of the Dwijas or birds in a manner similar to a bride being led to her husband's home after being blessed by the sacred twice born.[30] Apart from the poetical thought in this verse we

25.........नदीमातृक गाहमानः । द्रक्ष्यस्यारात् परिमिततया मग्नकैलास
दृश्यं श्वेतं शैलं फणिपति मिवक्ष्मातला दुज्जिहानम् ॥ sl. 38

26. P 533 South Indian Shrines by P. V. Jagadisa Iyer.

27. नीलीपुष्पस्तबकललितं काननं संविचीयाः sl. 40

28. पूगारण्ये मृदु विचलयन्पालिकाचामराणि sl. 41

29. स्रोतोवेगादथ जनपदं सौम्य सीमन्तयन्ती
प्रत्यादेशो विबुधसरितस्स्यन्दते सह्यकन्या ।
काले काले परिणतिवशात्पर्वभेदावकीर्णैः
पुण्ड्रेक्षूणां पुलिनविशदैर्गद्गदामौक्तिकौघैः ॥ sl. 42

30. सह्यात्सङ्गा त्सपदिमरुता सागरं नीयमानां
भद्रालापै र्विहितकुशलां त्वादृशानां द्विजानाम् ।
यामस्कन्नास्सरसकदलीपत्रपातैर्निशान्ते
मन्दस्मेरां मधुपरिमलैर्वासयन्तीवपूगाः ॥ sl. 43

can gather some real facts; the river starts from the Western Ghats (Sahya) and proceeds towards the sea with both its banks abounding in arecanut trees.

Pushkarani better known as Chandrapushkarani is another reputed tank near Kaveri at Srirangam. This sacred pond is said to have cured the moon-god of consumption and its very piety is emphasised by the fact that several other sacred waters resort to it for purifying themselves.[31] Srirangam, dating traditionally later than Rama, the poet necessarily makes the hero of the poem state that the place of Pushkarani would be the future site of Srirangam wherein would be installed the tutelary deity of the Iksvakus, Sri Ranganatha.[32]

The swan is then given a note of warning being asked to quickly cross the strip of land between the Chola and Pandya territories infested by bands of robbers and noisy with the sound of crickets.[33] This particular part of the country was not perhaps inhabited in the time of the poet but being wild might have been infested by fierce and bloodthirsty bandits as we are led to suppose from the way in which the swan is asked to take to wing taking care not to make the least noise which might attract their attention.

Coming to the Pandya territory the poet describes the women of the place taking care to stress on their peculiar characteristic, that of wearing gemdecked ear ornaments.[34] These jewels known as Kammals are very famous in the south and must have been very popular even in the time of Venkatanatha. The winged messenger is here asked to prostrate before the form of Vishnu situated on a hill called Vrishabhacala and going by the name of Sundara.[35] A sacred stream is also described as flowing from this

31. तीर्थैरन्यैरपि परिगतां शुद्धिहेतोः समन्ताच्चन्द्रोल्लासप्रथितयशसः संपदं पुष्करिण्याः ॥ sl. 44
32. यस्मिन्नस्मत्कुलधनतया सौम्य साकेतभाजः स्थानं भाव्यं मुनिभिरुदितं श्रीमतो रङ्गधाम्नः ॥ sl. 45
33. चोराक्रान्तं तदनुविपिनं चोलपाण्ड्यान्तरस्थं झिल्लीनादश्रवणपरुषं शीघ्रमेव व्यतीयाः । sl. 47
34. स्रस्तापीडप्रचलदलकं व्यक्तताटङ्करत्नम्....sl. 48
35. नित्यावासं वृषभमचलं सुन्दराख्यस्य विष्णोः प्रत्यासीदन्सपदि विनतो भागधेयं नतः स्याः । sl. 49

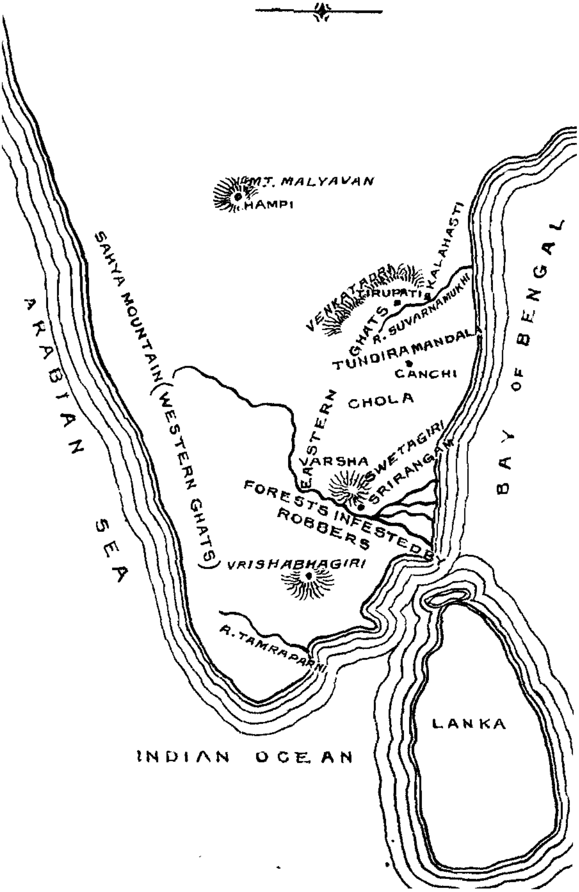
hill.[36] Under the head Tirumalirum Solaimalai (modern Alagarkoil near Madura) Mr. Jagadisa Iyer says "The hill on which the Lord stays is known as Rishbhagiri. The waterfall Nupuragangai on the hill is a sacred one, King Malayadhwaja Pandya worshipped the Lord here".[37] This Vaishnavite shrine is also one of the 108 holy places mentioned before. It is really surprising how the poet has so wantonly forgotten Sundareswara and Meenakshiamma, the deities. most important in the Pandya territory. Sundararaja is believed to have come there to give away Parvati, his sister in marriage to Siva. In the 'Indian Companion', under the head Alagar, we have the information—"Range of low hills, about twelve miles in length. average height 1000 feet above the sea. On the south-east face, at the foot of the hill, stand the Kallar Alagar Koil, the ancient temple of the Kallans or Kallars, situated 12 miles north-east of Madura. There are two temples as at Tirupati one on the hill and another at its foot. One need not say specially that Alagar and Sundara mean the same. It is so plain".

The mythical story of the Pandya kings binding the clouds with the help of Siva's missiles to compel them to rain properly is mentioned here only to show the fertility of the soil.[38] From the glorious way in which the Pandyan territories consisting of towns and villages is described we are led to suppose that it must have been very flourishing in the days of the poet.[39]

Though Tamraparni flows in a country quite out of the way south-west of Rameswaram, the poet does not like the idea of silence over so famous a river and naturally the swan is advised to go there also. Further since Rama had not yet built the Setu it did not matter much from where the ocean was crossed. The river, having for its sand the heaps of pearls falling from the oyster shells appearing on that account like the sky full of stars, is very clear on account of the near residence of Agastya and capable of

36. यस्योत्सङ्गे बलिविजयिनस्तस्यमञ्जीरवान्तं पाथोदिव्य पशुपति जटास्पर्शशून्यं विभाति ॥ sl. 49
37. P. 536 South Indian Shrines by P. V. Jagadisa Iyer.
38. ईशादस्त्राण्यधिगतवतां क्षत्रियाणां प्रभावा त्कारावासस्मरण चकितै स्सिक्तसस्यान्पयोदैः । sl. 50
39. पश्यन्यायाः परमलकयास्पर्धमानैरजस्रं पुण्यावासैः पुरजनपदै र्मण्डितान्पाण्ड्यदेशान् ॥ sl. 50

SOUTH INDIA
OF
VENKATANATHA'S TIME



curing diseases.[40] That the mouth of Tamraparni at its confluence with the sea abounds in pearls is very famous and this fact is only poetically exaggerated by Venkatanatha. The tradition that Agastya lived somewhere near Tamraparni in the Tinnevelly District is very old. We have Agastyampalli near Vedaranyam in Tanjore District where Siva is said to have appeared to the sage in his wedding dress. Agastyamalai in the Tinnevelly District is named in memory of this sage.[41] The 'Indian Companion' says under the head Agastyamalai, that it is a mountain peak, 6200 feet above the sea in the Agustiesvaram Taluk, formerly an important astronomical station. The Tamraparni river has its source on this hill. The boundary between Travancore State and Tinnevelly District runs over this hill.[42] Agastya is also represented as a star by the rise of which waters are said to get purified. Kalidasa has referred to it in his Raghuvamsa. No wonder then that the Tamraparni is clear and pure with the sage eternally near it. The medicinal properties of its water are as famous to-day as in the time of the poet.

The bird is next advised to take rest on the Malaya or Sandal hills enjoying the pleasant breeze after a cool bath in the ripples of Tamraparni.[43] The Malaya slopes are stated here as sandy on account of their proximity to the river.[44] A little to the left of the river is situated the beach abounding in dark palmyra and Tamala trees with sands increased doubly by the pollen of Ketaki flowers, looking beautiful with the pearls thrown ashore by the waves.[45] After a short stay in that bowlike beach where noisy streams flow

40. मुक्ताजालै र्जनितपुलिनां शुक्तिसंतानमुक्तैः
तारापूर्णां दिवमिव ततस्ताम्रपर्णीं भजेथाः ।
प्रत्यासत्या नियतविशदं पीतसिन्धोर्महर्षेः
पानीयन्ते परिणमयिता तत्र मुक्तामयत्वम् ॥ sl. 51
41. South Indian Shrines p. 401
42. Indian companion or general statistics of India
43. तस्यास्स्वैरं सरसिजमुखास्वादसंप्रीतचेताश्शीतीभूतस्तरललहरी बाहुसंश्लेषणेन । अध्यासीनः पुलिनमलिनैर्वीजितश्चन्दनाद्रेः श्रान्तिं शान्तिं गमयतु भवान् सागरं लङ्घयिष्यन् ॥ sl. 51
44. अध्यासीनः पुलिनमलिनैर्वीजितश्चन्दनाद्रेः sl. 51
45. सव्यं तस्याः कियदिवगतश्यामतालीतमालां त्वत्प्रायाणां तरुण वयसां चेतसो नन्दयित्रीम् । वेलामब्धेर्विविधलहरीदत्तमुक्ताभिरामां द्रक्ष्यस्यारात् द्विगुणपुलिनां केतकीनां परागैः ॥ sl. 53

from mountains on both sides the swan is to leave for Lanka.[46] Here the poet describes in a glowing way the beauty of coral reefs in the sea appearing like a forest on fire, the sky at twilight, the elephant with red orpiment, Vishnu with his orange robes, the cloud with the lightning.[47] The very graphic way in which the poet emphasises the existence of coral reefs makes us believe that they ought to be there. The Maldive Islands to the south-west of Malabar are coral islands. There is nothing against coral reefs being found even in the Gulf of Mannar. There is some information regarding this supplied by the Indian architecture talking of the Ramesvaram temple there "again only the east and west gopurams have been completed to the summits and a peculiarity to be noted is that unlike gopurams in other temples on the main gate whose upper stories are built of brick, the rupa structure of the two completed Ramesvaram gopurams is built of coral cut into blocks or figures of the size and kind required. Now coral is abundant in the surrounding sea and is even now excavated for such purposes, and for burning into lime."[48] There is mentioned as the first hill on reaching the island, situated very close to the sea, one Suvelagiri.[49] This hill baffles identification. The poetical fancy that the swan would produce a twilight by its white moonlike reflection in the sea near by all reddenned by the corals with starlike pearls scattered here and there[50] goes only to prove the knowledge of

46. स्थित्वातत्क्षण मुभयतश्शैलशृङ्गावतीर्णैं स्स्रोतोभेदैरधिगतगुण चारुविष्फारघोषैः ।
लक्ष्यीकुर्वन्दशमुखपुरीं सौम्य पत्रप्रकृष्टो वेलाचापं शर इव सखे वेगतस्त्वं व्यतीयाः ॥ sl. 54

47. दावासक्तं वनमिव नभस्सन्ध्ययेवानुविद्धं
सिन्दूराङ्कद्विपमिव हरिं स्वाम्बरेणेव जुष्टम् ।
विद्युद्भिन्नं घनमिव सखे विद्रुमारण्ययोगा
द्देहे नैकं मिथुनमिव च द्रक्ष्यसि त्वं पयोधिम् ॥ sl. 55

48. Indian Architecture vol II P 104

49. द्रक्ष्यस्यग्रे लघुतरगतिश्शेषमुल्लङ्घ्ययसिन्धो
स्तोयाघातान्मसृणितशिलारम्यवेलं सुवेलम् ॥ sl. 57

50. यस्यासन्ने पयसि जलधे स्त्वत्प्रतिच्छन्दचन्द्राः
पक्षच्छेदक्षरितरुधिरस्तोमसंदर्शनीयाः ।
वीचीप्रान्ते विषमितरुचो मौक्तिकै स्तारकाभै
स्सन्ध्यामन्यां नियतमवनौ दर्शयन्ति प्रवालाः ॥ sl. 58

Venkatanatha about the pearl fisheries of the Gulf of Mannar. From there the city of Lanka is not far off and a glimpse of the city brings the chapter to a close.

The author of this poem has thus tried to give us some idea of the territories and noted places especially Vaishnavite on the way from the modern Hampi to the Tamraparni restricting himself to the east coast. Whatever might be the omissions it cannot be denied that the chapter opens our eyes, be it ever so little, to the condition of the territories and the peculiarities of the places in the 14th century.

My Impressions of Indo-China

By

MAHARSHI SIVADHYANANANDA.

It is the pride of every individual born in Bhārata Varsha that he is the descendant of an ancestry which controlled the whole world. Yet he will not be in a position to give a correct answer if questioned how his ancestors controlled the then known world. There was a time when the greater India extended from Meru, the Altai mountains in the North to Mahendra, the submerged continent of Lemuia in the South, and from the Iranian Plateau (Hiranya's land) in the west, to China—the land of the celestial in the east. This age belongs to the hoary past and is described in the two Puranas Bhāgavata and Skanda. If there is any reason to study both the Bhāgavata Purana and the Skānda Purāna, I will say that while the Skānda Purāna gives us an insight into the great Geological changes the earth underwent during that Primeveal age, the Bhāgavata Purana describes to us the various political changes that happened to Greater India during that age. Let us imagine a time when Mount Meru was the highest mountain in the north with the present Himalayas as the southern slope of that high mountain range, which extended into a vast plain bounded by the Black Sea region on the west and the China Sea region on the east. Let us also imagine a big island continent with the Vindhyas as the highest Northern Range separated from the Meru Region by the Hindustan sea and extending as far south as Māhendra a continent that extended from Madagascar to Australia. These two Regions would have comprised the land of the Aryan and the Non-Aryan people of whose fight we read in both the Puranas which faithfully describe the ancient state of the Greater India.

A study of Indo-China gives us an insight into the greatness of Bhārata Varsha during the middle ages, i.e., before the people of India got the langour and lassitude of degeneracy in them owing to the teachings of a philosophy that displaced them from where they were living pointing to an imaginary Moksha which no person has realised to his or to her advantage.

A visit to Angkor, to Bāli, to Singapore, to Anuradhapura and to Saigon gives an idea of that forgotten greatness of the Greater India over which our ancestors ruled. Even though the people have changed a good deal, even though foreign domination has blighted the ancient institutions, the culture lives in these regions and the ruins that are found scattered all over the place show in bold relief the greatness of the work of our forefathers. For this one reason at least, a study of Indo-China is worth the pains, and a visit to those places, besides kindling that ancient spirit in our veins, gives us also a hint or clue as to how India can be improved on modern lines. What does one see there now? The whole country has been brought to the latest European standard of civilisation with its fine roads, Municipia, Industries and other accessories of western materialistic culture. I shall describe a few of the salient features of the geography of Indo-China as I saw it not as I studied it in school.

THE THREE GREAT DIVISIONS.

Indo-China may now be politically divided into the British Indo-China comprising Burma and the crown-colony of Malaya, *Siam the independent kingdom placed* between two *European* neighbours who are jealous of each other's property and the French Indo-China whose protectorate Cambodia is supposed to be.

I. BRITISH INDO-CHINA.

1. *Burma.*

The first town that charms an Indian as soon as he has left his motherland is the cosmopolitan city of Rangoon where all the nations of the world find a place for living. It is an international port and though it is about 40 miles interior, it boasts of a wharf about 6 miles long where all the great ships of the world touch. Having four or five long streets, the Montgomery, the Fraser, the Dalhousie and the Merchant streets running parallel to the river Irrawaddy, it is divided into a number of cross streets that are mentioned by numbers except a few big ones such as the Moghul Street, Phayre's Street, Louis Street and others with neat sanitary arrangements, flush latrine system, and the underground drainage which make it appear a paradise at first sight. The Sulai Pagoda, the Shwe-Dagon Pagoda and other smaller Buddhist shrines are the ornaments of the town. One cannot have an idea of the London flats if he has not gone to Rangoon. In a city where art has completely displaced nature by its engineering and other

skill, one finds the lakes a refreshing sight with its natural sylvan beauty. Chin-Chan palace will give an idea of Chinese architecture in the near east.

Burma is a land of pagodas. 'In Pegu, Mandalay, Moulmien and all other places of interest, the pagoda is an imposing sight. The rocking pagoda in the up country is a marvel in itself. The beautiful palace of Mandalay which once boasted of ruby and other precious stone-inset on its walls, is still maintained with glass and other cheaper substitutes. This reminds one of the Mohawk Ruby mines in Burma, a working of which was shown by a cinema picture taken for the purpose of the Wembley Exhibition to represent Burma therein. How the workmen are tied with a perforated metallic cap or hood round the head to enable them to work in the mines but at the same time prevent them from gobbling away the precious stones and how these are guarded and the many ways of working the mines are a sight to see. I shall also in this connection describe two other films that were taken for the Wembley show, one describing the working of the timber industry in Burma and the other showing the Pwe and other dances of the land.

Burma may be roughly divided into two regions, Upper Burma and Lower Burma. Upper Burma is colder, drier, and more hilly whereas Lower Burma is a fertile rice plain with plenty of rain that extends from April to December. Great teak-wood forests exist in Upper Burma and when the trees are felled, they are thrown into the Irrawaddy after clipping. Hundreds of big logs will be seen floating down the river and workmen will be directing them to ports where they are taken to timber yards by elephants and worked. The best timber is exported to England and the second or third rate timber alone remains in the land. It is a sight to see how men standing on rafts direct these logs of wood to go down the river and how the elephants get into creeks running from the river into the interior timber Depots and pile the logs in order. Now to the other film:

The Burman is jovial by temperament and never cares for what happens to-morrow. While the women of the land undertake to feed the drones of the land, the men will be spending their time in sight-seeing or other idle occupations. The Pwe or the national dance is made to the accompaniment of music, by Burmese women who have not the stigma attached to a Nautch girl in India. The music makes a terrible noise; the drums from the size of a small cocoanut to that of a big Maddhala arranged

symphonically to produce a reverberation corresponding to the sound of Cymbal so arranged in a circular platform are a sight to see. Besides, even bamboo splits are used to produce a sound jarring to the ears of the foreigners. Yet this is considered the best of the dances. The Burmese use violins and banjos. They have dramas, puppet dance, (பாவைக்கூத்து) and other varieties of the dramatic art but they are all copies more of the Chinese Art than Indian. There is not much of a stage manoeuvring in their plays and in fact it may be said truly of the whole of Indo-China, that the histrionic talents of the people there are of the Chinese type and not the refined Indian model. Neither the Malayan-woman-dance, nor the Cambodian and the Annamese dances are Indian in their types.

The rattan-ball-kick played by clever Burman youths in groups of four to eight with the sustained flying of the ball in the air with kicks preventing them from falling on the ground directed by front and back motions of the leg and the thigh, is another sight to see. It is enough to say that the play has attracted the film takers of the Wembly Show.

All modern towns in Burma have sprung on the banks of the river Irrawaddy to enable the rice and other agricultural products of the land to be easily exported through Rangoon. The river is navigable up to about 680 miles up Rangoon and the Irrawaddy Flotilla Company incorporated in England has the whole transhipment in their hands. There are some honourable exceptions. For instance our late Raja Ramanatha Reddiar had a few flotillas and boats but that is in a great minority. The Government revenue is chiefly from the rice export trade as the land is not charged with tax. The Burman pays a poll tax Thathameda, from which the foreign settler in the land is immune. The Burmese social customs are worth mentioning now. The Burmese are bound by Buddhist law which gives a matrimonial separation for a paltry sum ranging from thirty to hundred rupees. Besides, a Burman woman will not be willing to forego her independence even if she gets the gift of the whole universe instead. The early Indians who wanted to settle with the Burman ladies in the land found it against their national prestige and have since taken to the habit of going with their wives, except the Nattukkottai Community, who are prohibited from doing so by their proprietors in the interest of their trade. The Burman woman never leaves her national dress whether she is married to an Indian, Persian, European or Chinese. A mother-in-law will have the happiness of receiving the Mudaliar or the Iyer son-

in-law along with the Jerbadi (the Burman Muslims go by this name), the European and the Chinese sons-in-law on the days of her national rejoicings (such as the New Year Day, corresponding to our Chitrai or other Pagoda festivals) all living together with that happiness peculiar to a land which has thrown off all caste barriers.

There is a lot that can be spoken about Burma but other parts of Indo-China require me to stop here for the present. An attempt is being made to connect India, Burma and Siam by a railway route, but it may take a long time to materialise. Besides timber and rice, the kerosene industry is the chief. Yenangyang oil wells are famous and the crude oil is taken to the refinery at Rangoon by pipes running through a distance of nearly a hundred miles. The Burma Oil Company is a great industrial body that works it, in addition to making candles and other mobil-oil products. Rubber plantation is not so extensive as in F. M. S., and all the cocoanuts used in Burma are imported from the latter. In fact the cocoanut palm does not thrive well in the loamy soil of Burma. Dorian, Mangustine, Kanajyoti and other fruit trees are in plenty, and Mandalay mangoes can well compare with the Vellore and Banganapalle special graft varieties of India.

2. MALAYA.

We shall for the present leave the Shan States now under the control of the Burman Government and take ship to Penang to have an idea of the Malay Peninsula. One would have thought of crossing to the Siam border from Moulmein but the splendid train arrangements from the Straits Settlements to Bangkok attract us so much that we are tempted to go to Penang first and then to Bangkok. Penang, Malacca and Singapore are called Straits Settlements, whereas the principalities of Johore, Selangor and Teluk Anson states form the Federated Malay States with a central secretariat at Kuala-Lumpur. One thing that strikes an Indian most as soon as he enters Malaya is the use of Malay language by all, whereas even the Burman in Burma is seen to converse in Hindustani.

Malay like Malayalam has few variations of case and tense endings and easily manipulated by the foreigner with a vocabulary of about 100 words or so. It is a mixture of Arabian and Sanskrit, and one finds that the whole population of Malaya before they joined Islam, were Hindus, speaking a prakrita dia-

lect of Sanskrit. Simhapura (Singapore) and Soumatra were at one time the centres of such Hindu culture before they succumbed to the Arabian and Moorish traders that visited the south Asiatic coast for its natural products. Malacca was the first penal settlement of British India in the eastern waters, and ceased to be such, giving its place to the Andamans, only after the Straits were separated from Calcutta, i.e., from the Indian Government whose revenues were lavishly expended to develop the resources of the present crown colony of Malaya from 1827 to 1867.

The long peninsula of Malaya may be roughly divided into two parts, the Northern half having plantations of cocoanut and rubber, and the Southern half where the tin mines are worked. Penang and Singapore are two islands one on the north and the other on the south of Malaya on the western coast of the peninsula. Whereas the Singapore-Creek is bridged over, the Penang-Creek is to be crossed by a steam-boat or ferry. Rice, pine-apple, Dorian, Mangustine and other fruit trees are grown in the Northern half. Yet it is the rubber plantation that attracts the eye of the traveller from Penang to Kuala-Lumpur the central workshop station of the F. M. S. Railway. The second class fare in the F. M. S. is only one and one third of the third class, and coolies alone travel in the last class. Besides, the Railway arrangement is so very splendid that one never finds any difficulty in reaching his destination. Ticket examiners travel in each train, issue tickets to those who have boarded the train without purchasing one and take away the tickets from those that possess one, previous to the station of alighting. Some Native states too possess Railways where there is a customs officer to prevent contraband articles from being carried through their country.

Rubber is the main industry in the Northern half and at Ipoh there is a rubber factory owned by one of the Nattukkottai Chettiars worth seeing. The manufactured articles could not be exported to India cheaply as there is a heavy tariff on such articles. In the Crown colonies there is no duty for the import of machinery from Britain and other countries and hence all industrial plants and motor cars are so cheap that one wonders how they sell so there. You will get the best of diamonds at Singapore. Colombo ranks the second in the trade and Rangoon the third, whereas, Madras and other parts of India get only third rate or fourth rate diamonds.

The Rubber plantation is worked by indentured labour taken mostly from India; but the Chinese labourer gets the better wage.

The reasons are many; while the Indian labourer shows a poor standard of living, the Chinaman keeps to the British labourer's standard; while the Indian labourer wastes his time in drinking and making illicit love with his sister labour woman, the Chinaman is thrifty and tries before the end of a few years to become a small merchant or a tin-miner. The Chinaman has the monopoly of Rikshaw pulling in Malaya whereas the Andhra (Korangi as he is slangly called) does it in Burma. It is said that the national pride of Chin-Chain, once the Rangoon millionaire, made him request his countrymen to drop the rikshaw pulling habit by providing them means for other walks of life. Toddy shops are kept by the estate managers and also provision stores wherefrom things are supplied to the labourer and the amount of purchase deducted from his wages. One will find a Mariamman Koil, a toddy shop, a store, and the apology for a school in each estate centre. The insistence of the temple festival by the managers of estates who contribute for the same, is in my opinion intended to show to the European, the vulgarity of the religious sentiments of the Indians.

There are many natural sceneries in Taiping, Kuala Kangsar, Dindings harbour and Ipoh. The limestone hanging caves at Ipoh and Kuala-Lumpur have become Subramanya Shrines. Aiyar Atam (தண்ணீர்மலைவேலவர்) Vêlavar is a common sight, where the Chetties live and have a flourishing trade. The hot springs near Malacca and the sea side resort of Port Jackson are places worth a visit. One fact is worth mentioning at this stage namely that there are no crows in Malaya except at Klang. The Penang Hill station which is reached by a railway that runs at a very deep gradient with boxes which are drawn up and down simultaneously by electricity, the Chinese Monastery and the Zoo at Penang are worth seeing. The traveller on the Hill Railway from Taiping to Ipoh will enjoy a good breeze and sight like that of the Nilgiri mountain railway from Mettupalayam to Coonoor, with this difference, that while the Coonoor train runs on toothed line, the F. M. S. train is drawn by two engines on both sides of the train as is seen from Kandy to Nainoy in Ceylon.

After one has reached Kuala-Lumpur, the passenger has to wait there for at least 10 hours before he can take the next train to Singapore. As pointed out before, south of Kuala-Lumpur is the land of the Tin-mining industry. This does not mean that Rubber plantation has altogether been stopped in these parts. Far from that, there are both the industries in the south. Originally it was

the Chinaman who worked these tin mines by digging deep and carrying the white mud and water containing the tin-ore to a height of even a hundred feet through force-pumps and silting the mud in broad pans of 200 to 500 sq. ft. But this left the place very ugly to look at, after the ore has been taken, and it will take very many years to fill up the pits by natural process. Nowadays dredgers are used and as the dredger works out the ore, the earth is being filled up automatically leaving no complaint for the owner of the land or the onlooker to make. How the tin sand is roasted, silted and melted and how the tin blocks are exported from Penang are better seen than described.

Like Burma, Malaya too is a land of no caste; but the Indian, wherever he goes, will make a pandemonium of the place and this is illustrated in Burma and Malaya by the existence of the Ahambadiya Association, the Adi-Dravida Association, Maruthuva Kula Sangam, Kallar Sangam, the Ceylonese Association and the last but not the least the Brahmin Association in these various towns. There is an Indian Association with branches at all the important centres of the country but this is the only political association in Malaya. Even here the Ceylonese Indian will not join as he considers himself a super-Indian owing to his birth in the premier Crown colony of the Empire, i.e., Ceylon. There are then the Straits-born-Indians, a mixed community with Malayan wives who claim the privilege of getting the fat salaried posts in Malaya. The Malay people themselves are only awakening now and there was a time when the Malay took pride in being a gentleman chaffeur—the greatest aspiration of his life.

The Malay women are of the loose type of Muslims and they will appear as dancers in public functions, though that occupation has not got the stigma attached to it in India. Though the Indian freely mixes with the Malay woman in social amenities, he will not take his Malay wife to this side of the Bay. Some Chinese take to marrying the Indians but as a class the custom is prohibited by strict social rigour and the Chinese brothels, are not visited by our Indian brethren on the other side of the Bay. They are awful pork-eaters and rearing of pigs is a big industry with them. To the Chinaman his national festivals alone count, be he a Christian or a Muslim. The Chinese temples, unlike the Burmese pagodas, are houses with peculiar roofings, and crackers and paper are burnt in these temples to exorcise evil spirits from the place. The Burmese funeral procession is nothing when compared to the Chinese one where a

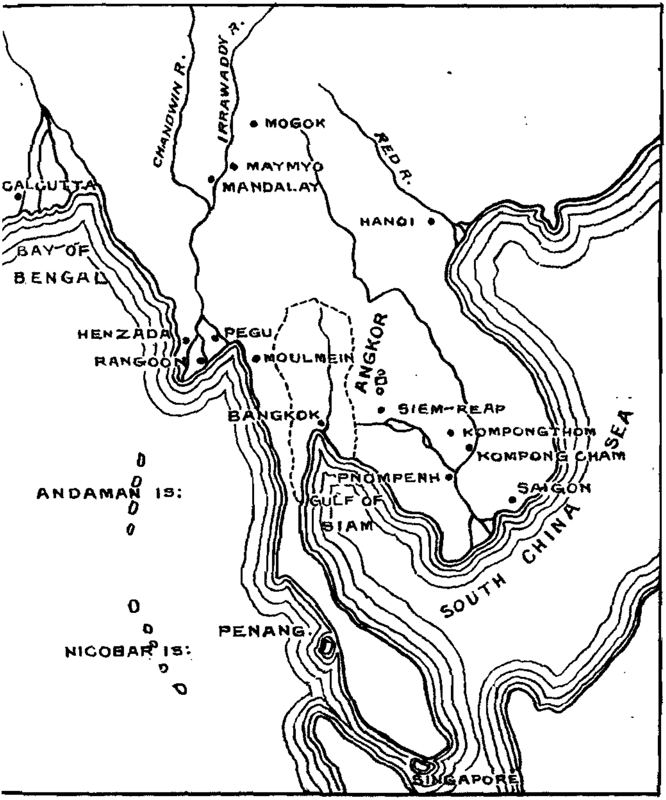
line of eatables, Ponghyis, Priests, Priestesses and laymen, extends even to one or two furlongs depending on the riches of the dead individual. Display of the dead body in balmed cases and the merriments and gambling that continue for months together with other gala shows, will be unthinkable to the Indian.

Penang is a lovely health resort and the quiet man will have plenty of comforts to enjoy if he has the money to back him; whereas Singapore is a very busy place, far busier than Rangoon. The Singapore docks are in the making and when the work is finished, one expects to see, Rangoon, Colombo, Nicobars and other small islands in the Indian seas to be great British naval ports.

II SIAM.

We shall for the present leave Malaya and take the weekly mail to Bangkok. Though my knowledge of Siam is not personal I shall throw some light gained first hand from my friends living in Siam. The Siamese language like the Burmese is of Sanskrit origin and the script too resembles Sanskrit a little, whereas Malay script resembles Urdu. The Siamese king is called Rama and in Siam and Cambodia, Ramayana has great hold on the people. The foreigners that are employed in Siam are tempted to take Siamese wives and induced to live permanently in the country. The Siamese and the Cambodian women are alike in form, fair, short and with cropped heads. They are Dravidian in their face-cuts and dress like Madhwa women. They are rich and work hard. The men also dress like women and have cropped heads. They are great dancers and musicians. The government allows the settling of the foreigner in the country and gives all encouragement to him. Bangkok is supposed to be one of the finest looking towns in the east. The rich paddy fields without any draining of the country by outside nations enable the Siamese to live in luxury. The Chetties are afraid to settle in Siam as it is contrary to their creed. The government titles given to the officers will be very queer and savour greatly of Sanskrit expression. The Librarian of the Government Sanskrit Library at Bangkok is one Mr. P. Subramanya Aiyar, a Sanskrit M.A. of the Madras University. It is easy to visit the ruins of Angkor from Siam as there is good motor transit to that place from Bangkok. But let us return to Singapore by train and take the sea route to Saigon.

INDO-CHINA



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III THE FRENCH COCHIN CHINA.

Leaving Malaya, the land of tarred roads and beautiful small towns with all civic conveniences, let us take a continental liner to Saigon. The Messageries Maritimes at Singapore will give one all the information needed and it is a pleasure to travel in these continental liners where there is a third class cabin system for the convenience of passengers. For the first time in an Indian's life, he feels that Europeans also have social instincts. The journey is very pleasant and Saigon is reached on the fourth morning. One feels the worry of travelling to foreign countries at the very start, for, at Singapore itself one feels the trouble of getting the Visa and attending the French Consul's Office to get a French pass. The rules have become stricter now and Indians have to take their passports from the province of their birth. Unless a person has a friend at the foreign country he goes to, there is not even a chance of his getting into it. Even if he gets into the land, he has to carry his special pass both day and night on his person, lest he be locked up for want of one. To continue, Saigon is one of the latest towns in the East, developed at a very high cost from reclaimed swampy land and Rue De Catenat in whose corner the Marie is situate, is the finest street in Saigon. Cochin-China does not boast of long railways, but the motor roads that extend to many hundred kilometres with few zig-zags are a sight to see. Unlike the injunction in the British territory, 'Keep to the right' is the order there. The engineering skill of the French is such that one finds that engines, whether motor boats, railway engines, or other mechanical devices, look smaller than the clumsy ones seen in this land and turn out better work. The bridges that are now becoming common in our land, of cement concrete and iron rods have been in vogue there long long ago. The tiny motor ferries that carry the motor cars and buses across swift-flowing rivers show the ingenuity of the French engineering skill. Besides, one finds at all junctions clear hand-posts to direct the traveller all through the land, indicating the distances to the place that one has to reach by travelling through the road.

Cochin-China is a land of plenty. Paddy fields extend all over the country and one is charmed to see a sheet of the paddy fields growing for hundreds of kilometres together. It is no wonder if one calls Cochin-China as the 'Granary of France'. The French are a polite race and freely mix with the Annamites and other native population. The Cochin-Chinese are fair and easy-

going in their habits. Without much exertion the fields yield rich crops and the people belong to a race of very jovial temperament. The French politician is more cunning than the Britisher who cannot play a double game of outward sympathy and inward rigour. One can go freely into a café, have all the social freedom as at home, but when the question of politics comes, you can count with your fingers the number of the *Citizens of France* who alone enjoy the personal and other civic liberties of a free nation. These Citizens of France are selected from respected families known to be loyal after some severe acid tests by the government. Hence one is led to conclude that British India enjoys greater freedom than the French Republic, where 'Equality, Fraternity and Liberty' is talked of from house-tops. Leaving the political aspects of the question here, let us travel interior and find out what the country looks like. The vast areas of paddy fields with swollen streams running through them here and there studded with villages or small towns create an impression of plenty on the mind of the new-comer. Each village boasts of a municipium, with a church, a school, a market place, a customs office and neatly kept streets. Though one cannot see the soft gliding tarred roads as in Malaya, the roads are straight, well-metalled and free from accidents to vehicles which is a common sight in India, as on each motor are written the rules for right travel, and as the people there are very careful in their conduct and behaviour. Each person practises the duties and responsibilities of a true citizen as taught in the école and the absence of difference between man and man goes a great way to bring about a harmony in living among the inhabitants there. Except a few Chetties, all the Indians are from French India and are very social to the newcomer.

The Zoo and the Museum in Saigon are worth seeing as also the Public Library. The British Indian's 'Parlez vous Anglaise' is always met with a 'Ne Pas' and the Indians living there are good at speaking French, Annamese or Cambodian. Except a few places where are ruins of ancient Hindu temples, the country is prosaic to the eye of the Indian. The Chinese are a better thriving race in Indo-China as is the case in Malaya and the immigration office is daily full of fresh arrivals. The Indian is called a Hindu Buddhist by the passport office whereas the Chinaman will be styled as Chinese Buddhist. I feel I have long dilated on men and manners of the land and so I wish to close this part of my observation with the remark that the Cambodians are exactly like Siamese in their looks, habits and manners,

whereas the Annamite is akin to his Chinese neighbour. The Cambodians look more like Indo-Dravidians than the Mongols. They are an isolated Indian race, like the Mahrattas in Tanjore.

Rice is the only product in Indo-China worth the name though the French are now laying out rubber plantations on the hill parts. Baklie is a place in Cochin-China where rain water is stored up for drinking in big jars and casks to be used all over the year. The same is the case in Kuala Selangor, F. M. S. The Government stores the rain water in big cemented reservoirs and supplies the same in small quantities during times of need. Even the rain water that falls from the garrets and roofs is carefully collected in zinc or other non-soakable tanks and a tumbler passes for the worth of a big bucket in these two places.

CAMBODIA.

Pnompenh is the capital of Cambodia and the king is more or less a prisoner in his country. The French are the lessees of the land. There are virgin forests in Cambodia all convertible into wet crop lands and one Pondicherry graduate who is the editor of the Government Law Journal living in Socthrang gets paddy worth lacs of dollars every year. The French dollar is bigger than the Singapore one and once was worth double the latter coin. But after the war they both stand on par. Pnompenh is a very fine looking city with its fortified palace on the one side and the modern town on the other. The mythology of the Devas and Asuras churning the milk-ocean is the one idea that comes to our memory when we see the bridges and gateways where the multi-headed cobra with or without men drawing its body in cement plaster is a common sight. The palace where the king's jewels are placed in a silver floor-tiled hall, is full of Buddhist images of different sizes in crystal, emerald, silver and gold set with precious stones; the Museum where the finds of the ruins of Angkor are kept, and the feet of Buddha with Sahasrarachakrareka as long as 4 or 5 feet in the temples and other government buildings are also worth seeing.

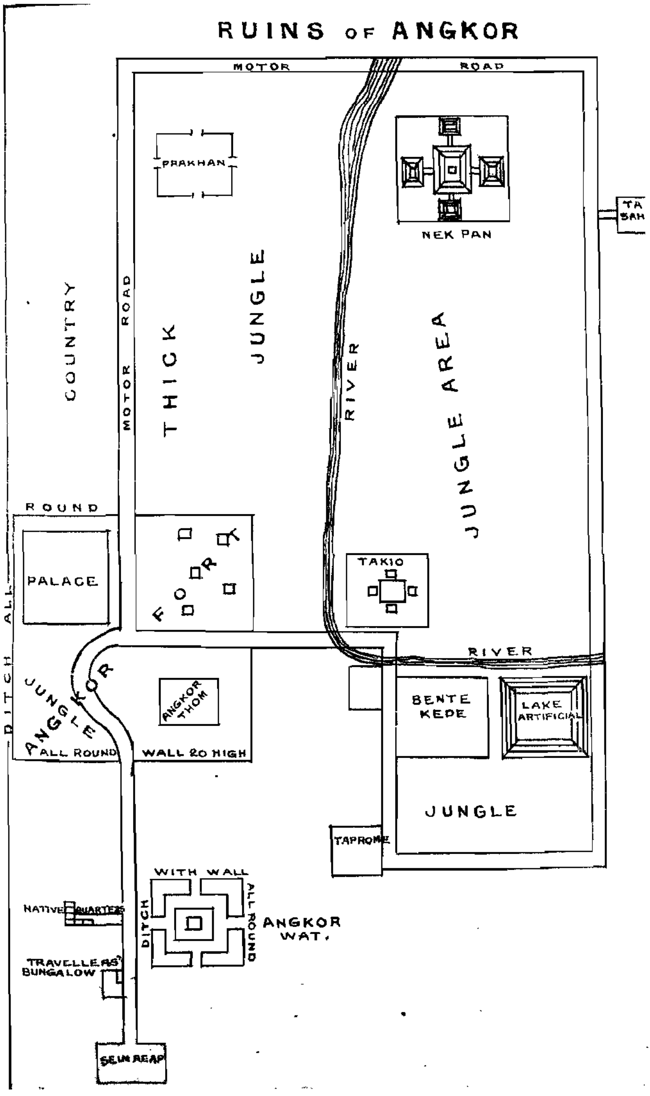
Every year in October-November, there is a water festival when the Mekong begins to ebb, after the king has splashed the water of the river with his royal sword as an order to do so. The boat-race and regatta conducted during that festival when the king goes in state and stays in the palace built for the purpose in the middle of the flowing stream and conducts the festival with great solemnity is worth comparing with what we see

in pictures about the same at Oxford and Cambridge. The royal dancing troupe of Cambodian women, who are good singers, dance for those three days and a drama is played within the fort in the Cambodian fashion. Even here the drama is like our Therukkoothu in South India. The houses are built of wood with pillars to support the flat all over Indo-China looking like the Paran (பரண்) built for watch-girls to sit. There is a kind of water palm that is plaited and used for roofing; and very often thattis made of bamboos or other similar wooden splits pasted with mud for the walls. But in towns, the houses are built of brick and mortar and plastered neatly though the flush and other drainage systems are not obtaining in Indo-China except Burma. The Indo-Chinese are primitive in their habits in many respects though every man and woman will be completely dressed from head to foot with shoes of the Anantapur type as footwear. Trousers are worn by the women with long coats that reach down the knee. But the Cambodians look like a small colony in their midst with square jaw bones, with dhoti worn like the Indian, with kacchams and with cropped heads. The Cambodian law is different from the French law and their cases are tried by the king's officers, whereas all others in the land are governed by the French law. Registration of marriages is compulsory in the French colony but the Cambodian is exempt from it.

RUINS OF ANGKOR.

Far from the coast, midway between Bangkok and Pnompenh are the ruins of Angkor, the once magnificent international meeting place or the Geneva of the East. From April to September, heavy rains prevent the traveller from reaching the place as the Mekong is full and flowing backward filling up the great and the little lakes which are about 150 to 300 kilometres from Pnompenh. It is after the rains that signs of falling off of the river are noticed and the road becomes safe to travel. As I remarked elsewhere the whole of Cochin-China and Cambodia is traversed by motor transit. The French have found that railways in a rice producing country as Cochin-China, will spoil the natural drainage systems of the land and have taken to the motor traffic which takes the ordinary road without interfering with the material resources of the country. Big rivers intervene no doubt and they are crossed by motor-boats which carry even the motor buses across the streams. 313 kilometres from Pnompenh lies Siem Reap, the modern town, near which lie the ruins of Angkor.

RUINS OF ANGKOR



The motor starts every Wednesday and Monday and reaches the places within 14 hours making a midday halt at Kampong Thom which is 170 kilometres from Pnompenh.

The site of Angkor had been long under the control of Siam though it nominally belonged to Cambodia. When the French became the lessees of Cambodia, they began to survey the extent of the territory and found out that Angkor was included within the Cambodian boundary. They claimed it from Siam and after a great tussle they got the site; but the king of Siam is said to have removed all the valuable property from the Ruins. The emerald Buddha statue in a sitting posture which is about two feet long and kept in the palace of Pnompenh is, they say, only a faint duplicate of the one which was taken away by the Siamese king. Another view also prevails that the French carried away the real statue to their museum at Paris. The dome of the Wat or temple of Angkor was roofed with gold and all those roofings with the images and the library were removed from the place, they say, before it came to the possession of the King of Cambodia.

Angkor Wat is one of the grandest structures in the East and shows the engineering skill of the architect that conceived it. The Holy of Holies which is on the third storey can be seen from outside the temple, from the first flat and from the second flat also. Having doors on all the four sides, it is so built that the king can have a darsan of the idol inside, from his room in the palace about 5 kilometres from the Wat. The whole ruins are about 40 kilometres in circumference and visited by all globe trotters who are interested in antiquarian studies. There is a travellers' bungalow for the convenience of visitors and the Cambodian who is in charge of the bungalow provides also rooms at one dollar a day for those whose scruples do not allow them to take a cosmopolitan meal. But this wooden house is a little far away from the bungalow. Motor cars and elephants are ready to take the passengers all round the ruins for a paltry sum of 5 dollars a head and the motor-man makes about fifty dollars a day this way.

The places of interest in the ruins are the Angkor Wat[1] (the temple of Angkor) Angkor Thom[2] (old town of Angkor) which contains the king's palace, Pra-khan[3] in complete ruins in the midst of a jungle, Newkpan[4] or the five tanks, Tak Kio[5] or the five temples and Bentekede[6] a big temple with a tank of equal size in front with flight of steps all round reaching the bottom of the tank on the other side of a river that flows through the

heart of the place, with Tah-Sah and other ruins scattered at a little distance. I shall take them one by one and say what I saw or heard thereat.

1. ANGKOR WAT: This is a tremendous piece of Indian architecture; the temple was originally Hindu; otherwise it would have followed the later Buddhist plan of building stupas with niches all round holding the images of Buddha. The Wat has an outer ditch all round the outside wall of the lowest prâkâra which is a little over two kilometres in length. The temple is a square structure and there are tanks inside the temple for people to bathe. The second prâkâra which form the galleries are gabled on both sides of the wall allowing the later Buddhist monks to have their library and *école* to teach religion to their lay pupils. The wall is of such a low height that it does not hide the view of the third storey and has stone-carved bars for the windows on both sides of it. The second flat has a number of small temples with square gopurams representing the heads of Brahma one on each side of the gopura. The heads are formed of several small pieces of stone so well jointed that the faces still look grand in-spite of the loose and dilapidated condition they lie in. The stones look like cement and they say they were brought from Benhua a nice little riverside town in Cochin-China where there is an aerodrome. The temples do not contain any images in them, but some wooden and other idols are collected and placed in a big hall in the second flat. Even from the second storey the interior of the Holy of Holies can be seen. When one ascends to the third floor he is able to have a complete view of the country all round and the man standing outside the temple premises looks like a pigmy. The roof of the Holy of Holies was paved with gold sheets, they say, and removed when the Siamese government handed over charge of the same to the Cambodian French Deputies. The roof is open to rainfall and the pits where from the images were dug out, are now filled deep with water. It was a Buddha image of a prodigious size that was removed from that place, which the king used to see from the top storey of his palace at Angkor Thom, early morning every day when he got up from his bed. The Nattukkottai Chetties are keeping an (Akhandam) ever-burning light there now and have set apart about 5,000 dollars for the purpose.

2. ANGKOR THOM: (Old Angkor) has a very dilapidated temple where frescoes of Ramayana scenes, Manmatha Samhara, Boat fights and of the Linga, either mutilated or converted into

a Buddha image, are seen. Some of the towers (gopurams) are kept in position by cement beams and support, erected by the French Government under the Preservation of Ancient Monuments Act. A few kilos from this temple in Angkor Thom is the palace terrace with elephants carved on the stone walls protecting it. It was on the top of this terrace that the king's palace existed, wherefrom he used to see the Deity in the uppermost shrine of Angkor Wat. All round lie scattered several small palaces which show that they served as lodgings to the kings of other lands that met there every year. There is an outer wall or fortress all round the town around which is a broad ditch which is now partly converted into paddy fields by the peasants of the neighbouring villages. There is a thick forest which, once we get into it, is very difficult to get out of. There are gateways on three sides of this fort and on one side in ruins, and motors run through two of these gates now.

3. PRA-KHAN: Pra-khan is completely covered by jungle and the Archaeological Department are clearing the forest slowly. The travellers take the foot-path leading from one main road and join the other main road through the ruins where beetle and other jungle insects live in abundance.

4. NEWKPAN: (Or the five tanks) is a fine sight to see. The central tank resembles the Teppa tank of our temples with a Bodhi (Ficus religiosa) tree in the centre and the image of Buddha at its foot. Four other tanks are on the four quarters of the central square one, which look like the bathing ghats of zenana ladies.

5. TAK-KIO: Or the five temples is another place worth visiting and one can ascend the upper storey and take a clockwise round around the central temple which must have contained Hindu idols but now they all have only the images of Buddha.

6. BENTEKADE: This is a spacious temple with walls all round which shows signs of persons having lived within the precincts, and the big tank opposite to the temple of the same size must have been the source of water-supply for the whole city. The flights of steps are still in order and the tank is about two or three miles in length and is nearly of the same breadth also. It is while going to this place and Tah Sah that one has to pass a gateway where on each side of the gate there is the multi-headed cobra drawn by human figures. The same existed on other gates, too, they say. A river is seen to run by this gate with clear crystal water far below the level of the road.

A visit to the ruins can alone impress one with the grandeur of this lost city and travellers from America and other countries visit this place that stands as a living monument of the great ancient Indian civilisation. When I had been to the place I had occasion to talk with an American visitor who exactly echoed the report that an Englishman had written in a Sunday paper of New York wherein it was said that the Indians that built this city of Angkor went east to Mexico and built the ancient Aztec city which is now the reminiscence of the Maya civilisation there. This reminds me of a Telugu journal that wrote about Vali's long trip through the underground passage as leading to the land of the Asura architect Maya in America quoting passages from Valmiki and interpreting them in this new light.

I was not able to see Bâli in Java where I understand the Buddhist architecture is more intact. But from what I saw in Burma, Malaya, Cochin-China and Cambodia, I am led to conclude that the Greater India extended from the Iran Plateau in the west to the China Sea on the east and from the Altai mountains on the north to somewhere on the Tropic of Capricorn in the south where a continent is said to be sunk by the spear of God Subramanya evidently a natural submergence under the sea which is also described in the ancient Sangam Tamil literature.

Economic Geography of the Vizagapatam* District

By

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The Vizagapatam District is the largest district in India and the most populous in the Madras Province. Its area is 17,189 square miles and has a population of over three millions. The economic resources of the district are abundant but are not developed. The genial climate of the littoral tract, an extensive sea-coast, valuable forest-wealth, graphite, mica, iron, manganese, and other mineral deposits, completion of the Vizagapatam Harbour, the extensive sea-board of the Bay of Bengal, Parvatipur-Raipur Railway, the Andhra University, constitution of a separate Andhra Province and several other potential factors predict a bright future for the people of the district. This district is the *medius terra* of British India including the depression of the Bay of Bengal. It is accessible to Bengal and the north by the B. N. Railway, to Madras and the South by the M. S. M. and S. I. Railways, to Central Provinces, Bombay and the west by the Raipur-Parvatipur section of the B. N. Railway and to Rangoon and Burma by the sea-board of the Bay of Bengal. The unique central position and its accessibility to all the regions of British India should naturally prove advantageous in developing the trade of the district. The Parvatipur-Raipur Railway opens up the extensive trade of the Central Provinces in oil-seeds, cotton, manganese, cement, etc., and the paddy-yielding regions of the Nagavali basin. The completion of the Vizagapatam harbour enlarges the hinterland of the port in all directions and makes it the natural outlet for the trade of the Central Provinces particularly with the eastern countries.

For administrative purposes the district is divided into twenty one taluks of which three belong to Government and the remaining eighteen comprising about nine-tenths of the total area

*A paper, read under the auspices of the Vizagapatam Branch of the Madras Geographical Association.

of the district are Zemindari. A fifth part of the remaining tenth is Inam or Mokhasa and is mainly in the Vizianagaram Samasthanam.

Physical Features.—The district may be divided into five broad divisions for the purpose of physical features, viz.,

1. An open plain about thirty miles in width, running roughly parallel to the sea-coast from north to south. This plain slopes from west to east towards the Bay of Bengal.

2. A hill-region comprising Bissamcuttack, Rayaghada and Gunupur taluks containing the valleys of the Nagavali and the Vamsadhara. This region lies to the north of the coastal plain.

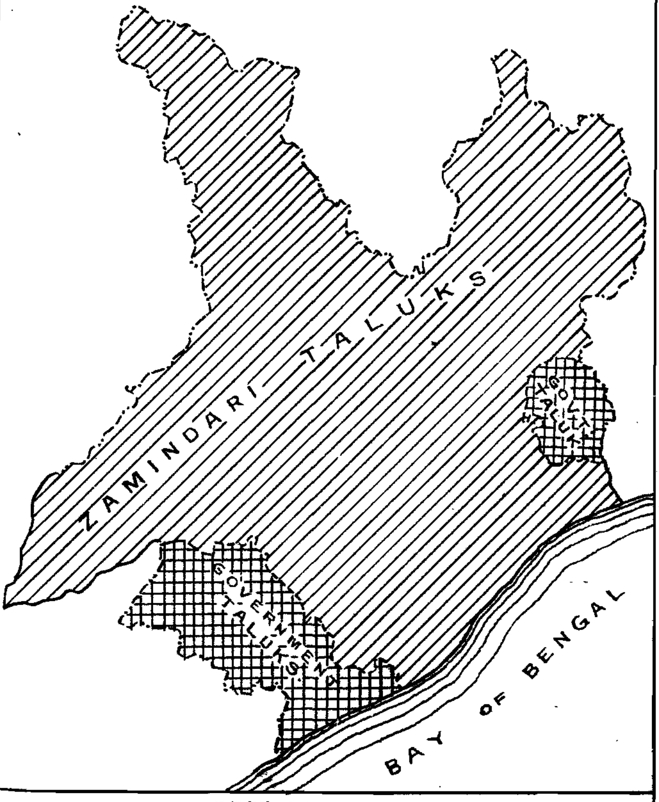
3. A three thousand feet plateau precipitously rising to the immediate west of the coastal plain and lying in the taluks of Golugonda, Padwa, Pottangi and Koraput. This plateau extends from north to south for about 110 miles and has an average width of about forty miles. This plateau drains westwards into the basin of the Godavari through the tributaries, the Indravati, the Macheru and the Kolab.

4. The Jeypore plateau which lies to the west of the three thousand feet plateau and almost parallel to it. This is 2000 feet above sea-level, lies in the taluks of Jeypore and Nowrangapur and drains westwards into the Godavari basin.

5. The Malkangiri plateau which lies to the south of the Jeypore plateau. This is 1000 feet above sea-level and drains into the basin of the Godavari through the Saveri and the Sileru.

The three plateaus mentioned above, the taluks of Gunupur and Rayaghada and the hill-regions of Srungavarapukota, Palakonda, Golugonda, Veeravilli, Parvatipur and Salur taluks (i.e., all the area excluding the coastal plain proper) is administered by the Collector of Vizagapatam in his special capacity as Agent to the Governor of Fort St. George. An Act passed in the year 1839 confers upon the Agent extraordinary powers of administration. He is the Collector, District Magistrate and District Judge within the Agency tract. The Agency portion has an area of 12,621 square miles or three-fourths of the area of the district. A proper development of the Agency tract augments the economic prosperity of the district. The Agency tract has its own peculiar problems which are rather embarrassing but not altogether beyond control. Eradication of malaria, developing means of communication, educating and civilising the hill-tribes, encouraging immigration and settlement from the over-populated regions, prevention of migration from the Agency tract which is now going on,

VIZAGAPATAM DISTRICT.

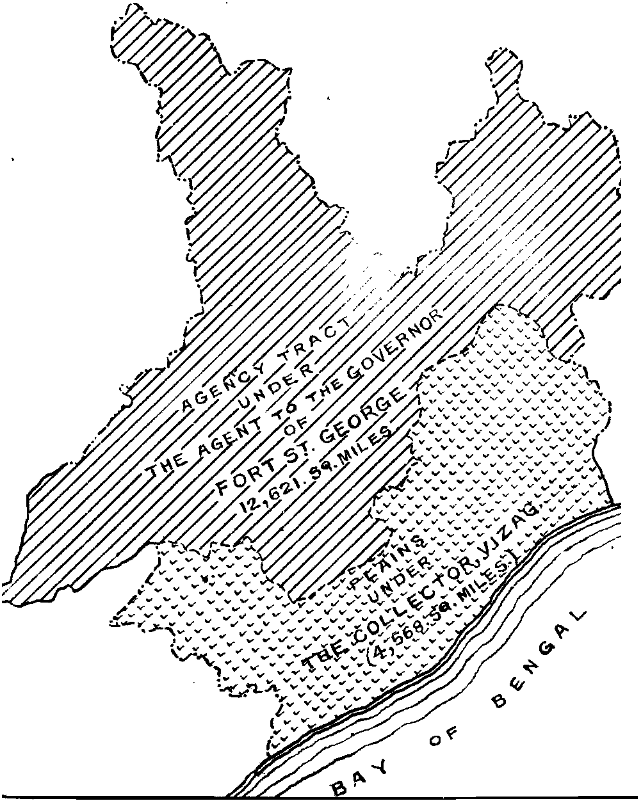


REFERENCE.

ZAMINDARY TALUKS.

GOVERNMENT TALUKS.

VIZAGAPATAM DISTRICT.

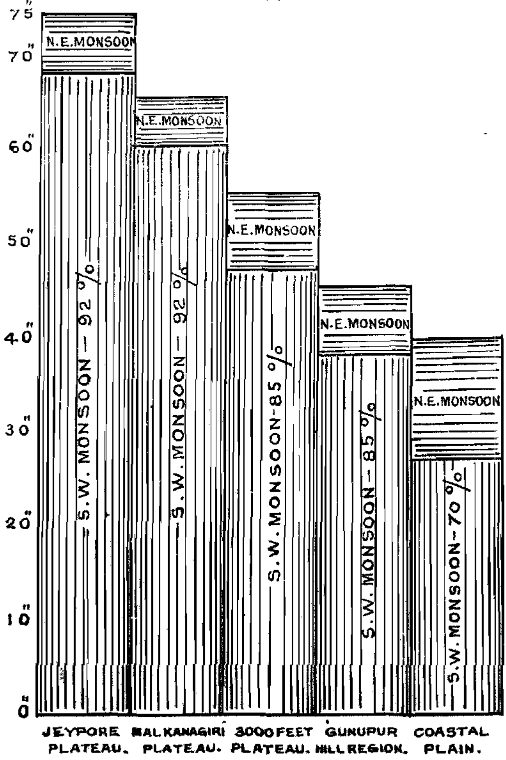


REFERENCE.

AGENCY TRACT.·12,621 SQ. MILES.

PLAINS PORTION. 4,568 „

DIAGRAM
SHOWING
RAIN FALL IN THE
NATURAL DIVISIONS
VIZAGAPATAM DISTRICT



improvement and proper exploitation of the immense forest and mineral wealth, establishment of industries which utilise wood and other forest products as the chief material, working up hydro-electric schemes are some of the problems in connection with the Agency area.

Rainfall.—This district gets its rainfall from the S. W. monsoon from June to September and from the N. E. monsoon from October to December. The following is the average rainfall in the various natural divisions:—

Natural Division.	S.W. Monsoon	N.E. Monsoon	Total	Percentage from S.W.	Percentage from N.E.
Jeypore Plateau ..	69	6	75	92	8
Malakangiri Plateau ..	61	5	66	92	8
Three thousand feet Plateau ..	48	8	56	85	15
Gunupur Hill-region ..	39	7	46	85	15
Coastal Plain ..	28	12	40	70	30

The heavy rainfall in the Jeypore and Malkangiri plateaus is due to the direct contact of the regions with the S. W. monsoon and the existence of forests. On the whole the rainfall is not inadequate but irregular and uncertain.

Rivers. The rivers of the district rise in the plateau area where rainfall is heavy. The rivers Kolab, Macheru and Indravati flow westwards into the Godavari basin. The Nagavali and the Vamsadhara flow eastwards but gradually drift into the Ganjam District. The Varaha, the Sarada, the Chittivalasa river and the Nellimarla river flow eastwards through the district into the Bay of Bengal. These rivers are small, dry up in summer months and are not useful for navigation. The small size and insufficiency of water in these rivers restrict their use for irrigation purposes. The cultivators have to depend upon artificial irrigation devices owing to the irregularity and inadequacy of rainfall in the coastal plain. Tanks and picota wells are the chief devices relied upon for agriculture.

Better irrigation facilities are generally obtained in the Government taluks as compared with the Zemindari tracts. A branch of the Public Works Department looks after the improvement and restoration of tank irrigation facilities in the Government taluks. In the Zemindari tracts there is a lack of enthusiam on the part of the Zemindars to investigate, develop and improve the irriga-

tion sources and facilities though such a course is beneficial both to the Zemindars and their tenants. The tanks are small and are not constructed on a systematic principle. A well-planned scheme of tank irrigation avoids the enormous waste of surplus water now experienced. The lack of a comprehensive scheme of tank-irrigation is also due to the fact that the tanks were constructed at different times indiscriminately and without forethought. The scattered existence of whole Inam and Mokhasa villages side by side with Zemindari villages is another evil. There is no co-operation or co-ordination of policy between the Zemindars and the Inamdars so as to develop a sound system of tank-irrigation.

Population.—The population of the district is 3,192,229. There are 2,231,874 persons in the plains portion and 960,355 in the Agency tract. The population of the Agency tract which is about three times the area of the plains portion is only 31 per cent of the total population of the district. Palakonda and the Vizagapatam taluks are the most densely peopled with a density of 688 and 655 per square mile respectively. The average density in the plains is 489. Ten per cent of the population of the plains live in towns and the remaining ninety per cent live in villages. For this purpose a collection of houses containing more than 5000 persons has been taken as urban.

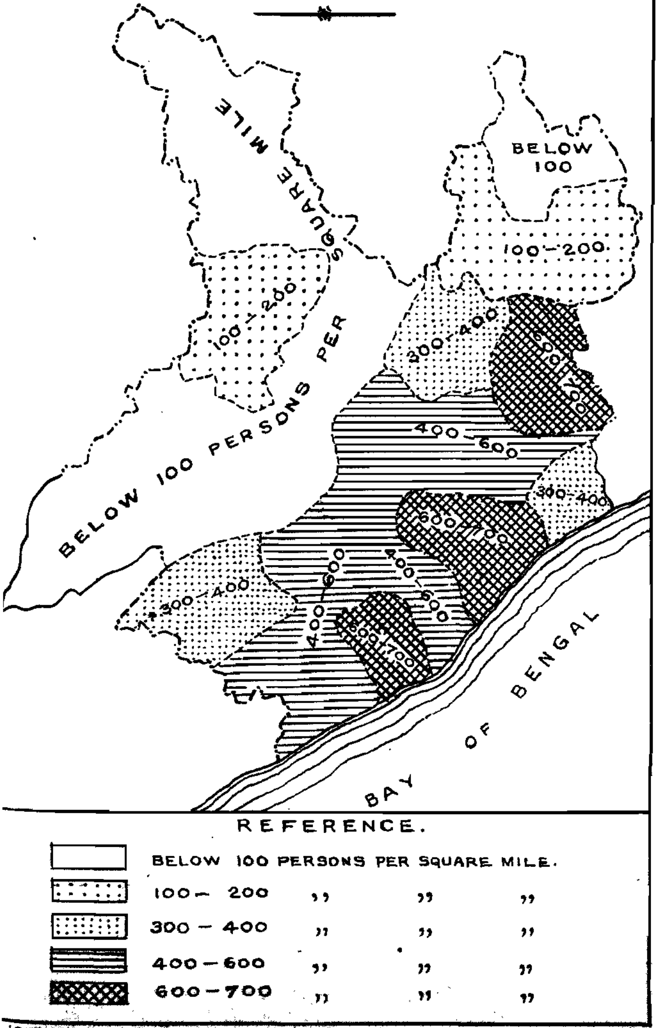
There are 32 towns and 2,754 villages in the plains. 60 per cent of the villages are Zemindari, 30 per cent are Inam and 10 per cent are Government villages. 4.7 per cent of the people in the plains are literate and the illiterate portion is 95.3 per cent.

Population in the Agency tract.—The average density is 83 persons per square mile. The lowest is in the Malkangiri taluk with only 22 persons per square mile. The highest density is found in the Jeypore taluk where there are 160 persons per square mile. There is only one town, that of Jeypore, with a population of about ten thousand persons. The number of villages in the Agency is misleading. A few huts near *Podu* cultivation generally constitute a village. The number of villages exceeds 8,000 and of these 7 are Inam villages and 513 are Government villages; the remaining are Zemindari.

Products.—The chief food crops are paddy for the upper classes and ragi, cumbu, korra, maize, etc., for the working classes. The commercial crops that are cultivated in the plains region are jute, groundnut and gingelly.

Paddy is grown in Jeypore, Nowrangapur and Gunupur taluks in the Agency and on the coastal plain under tanks. Only one crop is raised annually. The paddy grown in Gunupur and

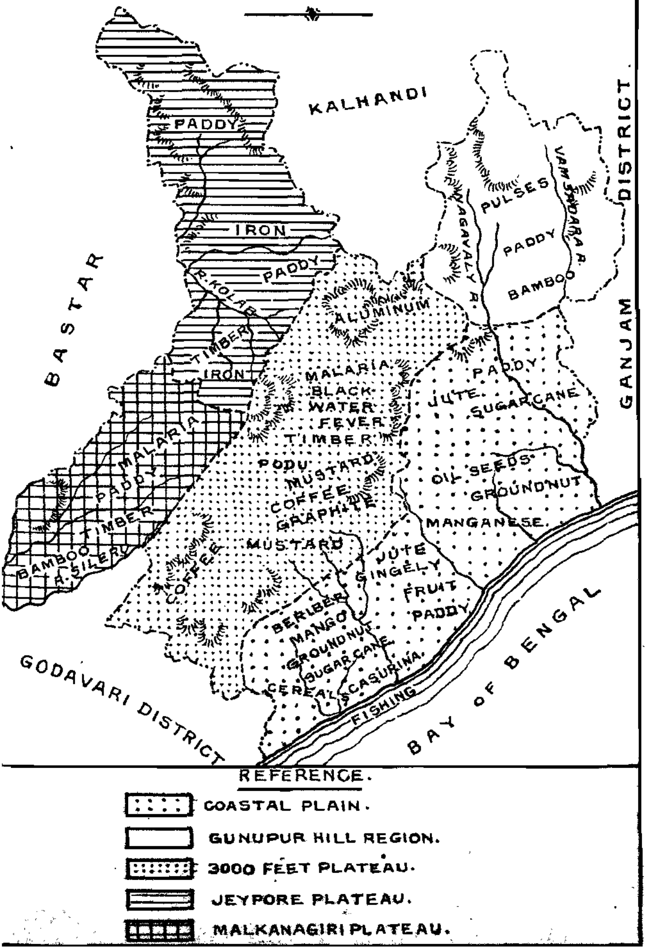
VIZAGAPATAM DISTRICT DENSITY OF POPULATION.



 LITHO. BY P.N.M & SONS

FIG 10.

VIZAGAPATAM DISTRICT
SHOWING
NATURAL REGIONS
AND
PRODUCTS.



Srungavarapukota taluks is famous for good quality. The normal yield per acre is 1400 lbs. i.e., the lowest yield in the Presidency, with the exception of Ganjam.

Ragi, cumbu, cholam and korra are grown throughout the district as a dry crop assisted by well-irrigation. The normal yield per acre of ragi and cholam (1200 and 1300 lbs. respectively) is the lowest in the Presidency with the exception of Ganjam. Korra yields 600 lbs. per acre which is 200 lbs above the Presidency Average. Cumbu yields 1200 lbs per acre while the Presidency Average is 1209 lbs.

Sugarcane is grown largely in the taluks of Palakonda and Anakapalle. The normal yield per acre is 6,500 lbs which is just a little above the Presidency Average.

Jute ("Deccan Hemp") is grown in the red soils of Bobbili, Salur, Gazapatinagaram and Vizianagaram. The hemp is exported to Europe and a part of it is spun and woven into gunny bags at the Chittivalasa and Nellimarla factories. This crop was being cultivated on a large scale about twenty years back, but its cultivation has now diminished owing to the fall in the price.

Ground-nut is cultivated in the sandy soils throughout the taluks of the coastal plain as a dry crop. The cultivation of this crop has received a set-back during the last three years owing to the fall in the prices. The area under the cultivation of this crop during the year 1928-29 was nearly one lakh acres and the total yield was 53,000 tons valued at approximately fifty eight lakhs of rupees. The yield per acre is 1232 lbs whereas the Presidency Average is 1114 lbs.

Pulses, gingelly, horse-gram, chillies and tobacco are grown throughout the district on a small scale for local consumption. The cultivation of cotton is almost neglected and it is necessary to pay more attention to its cultivation.

There are coffee-plantations belonging to Vizianagaram Samasthanam at Anantagiri on the Three-thousand feet plateau. There are plantations of coffee in the Golugonda Agency also but the quality of the seed produced is not quite good. Casuarina is grown on the sandy swamps along the coast. Casuarina is an excellent fuel and the poles which grow straight and strong are useful for building and other purposes. Large plantations are raised by the Vizianagaram Samasthanam at Pudimadaka, Bimlipatam, Konada and along the coast. Casuarina can be cultivated profitably on a commercial basis for the following reasons. It thrives on

land unfit for any other cultivation and the outlay is sma fetches revenue from the third year of its planting; by abo seventh or eighth year the trees are well-grown and can b The area can be re-planted again. The leaf of the trees drops down gets mixed with the sand and makes the soil fert due course of time. The plantations afford employment t people in the vicinity especially the fishing community living the coast. Divi-divi plantations can also be extensively raise the sandy tracts along the coast. The outlay is small. Its is useful for leather-tanning and the tree thrives on land whic not used for cultivation of crops.

The Mango tree thrives well in the red soils of the dist The chief centres are Alamanda, Kasimkota, Pendurti and Bhe ali noted for particular varieties. Mango gardens can be ra profitably on a commercial basis for reasons similar to the cu vation of casuarina. The mango thrives in dry, sandy red s unsuitable for cultivation of staple crops and the yield per acre more valuable than any other crop. The plant requires water and care only for about three years. The mango-crop seas occurs from February to June when the cultivators are free. T annual export of mango fruit from this district is valued at abo eight lakhs of rupees. It is estimated that the cultivator gets only fourth part of the price realised at the place of consumption, th remaining three-fourths goes to the middle-men. It is therefo necessary to organise co-operative societies to take up the marke ing function in an economic manner so as to benefit the produce

On account of the perishable nature of the mango fruit, faci lities for quick transit are necessary. The Report of the Mang Marketing Committee appointed in the year 1925 suggests the use of boxes instead of the bamboo baskets now used for packing. I is pointed out that the use of boxes is more economical and con- ducive to the preservation of fruit from damage in transit. The damage in transit in the case of basket-packing is 16 per cent whereas box-packing reduces the loss to less than 4 per cent. This secures a profit of 12 per cent in addition to other economies. The report furnishes the necessary particulars for manufacturing the cases. The cost is estimated at twelve annas per box.

Mineral Wealth.—What mines there are in the bosom of the earth has to be examined and explored. Manganese ore, is extracted from the mines at Garividi, Garbham and Kodur. The out-put is diminishing. Further deposits are yet to be discovered. To the north of Koraput there are aluminium deposits which are yet to be worked. Salt is manufactured along the coast at Pola-

varam, Nellimukku, Bimlipatam and Konada by the process of drawing sea-water into beds and allowing the water to evaporate. At Nellimukku, machinery is used for pumping sea water into the beds. In the interior parts of the plains, salt-earth is available. Poor people used to collect this earth, mix it with water, decant the solution and use it for salting. This practice has been prohibited by Government since about sixty years ago.

Graphite.—Graphite exists at Marangi, Kasipuram, Salur and Narasapatam. The nature of the deposits and the prospect of working them on a commercial basis is yet to be investigated.

Forest Wealth.—Fine and extensive forests containing valuable timber trees exist in the Jeypore Zemindari. The forests of the Vizianagaram Samasthanam consist of scrub jungle except at Anantagiri. The forests in Government taluks are limited in extent and value. Jeypore forests are capable of development. The wasteful practice of *Podu* Cultivation destroys the forests. The chief produce obtained from forests are timber,—sal, teak, gall-nut, satin wood, etc., tanning bark, lac, hides, honey, tamarind, soap-nut, rattan, bamboo, etc., all having high commercial value. Forests preserve the moisture of the earth for a long time; this is the reason for the Godavari having a perennial supply of water through the tributaries, the Indravati and the Saveri which rise in the forests. Forests also cause heavy rainfall in the regions where they grow.

Occupations.—57 per cent of the population in the plains are actual workers and the remaining 43 per cent are dependents on these workers. The dependents include children, old and disabled persons, females of the richer classes and others. 66 per cent of the males and 50 per cent of the females are actual workers. In the Agency 52 per cent of the population are actual workers and 48 per cent are dependents on the workers. The chief occupation of the people is agriculture which employs 68 per cent of the actual workers. Of those employed in agriculture 18 per cent are cultivators as owners, 66 per cent as tenants, 10 per cent are field-labourers and the rest are farm servants etc.

Spinning and weaving employ 3 per cent of the actual workers. Officials are less than 1 per cent but the dependents on officials are four times greater than the average i.e., in the case of non-officials the percentage of dependents is 75 whereas in the case of officials it is 265 per cent.

Agriculture.—The primitive methods of cultivation and implements are mainly in vogue. The Government has established an agricultural Research Farm at Anakapalle with a view to experiment and determine the varieties of paddy, sugar-cane, cotton and

other crops that are suitable for profitable cultivation in the locality. There is an experimental farm under the direction of agricultural experts trained in the Agricultural College, Coimbatore. Scientific manures, modern agricultural implements and new methods of cultivation are tried. Persons engaged or interested in cultivation are allowed to inspect and observe the operations in the respective seasons. Seeds and manures are also supplied to the public at reasonable prices. Agricultural demonstrators are stationed in different centres of the district who are entrusted with the duties of advising cultivators on agricultural matters.

The scientific methods of agriculture are not availed of owing to the small size of the holdings, poverty, ignorance and conservatism on the part of the tenants, lack of sympathy and co-operation on the part of the land-lord and to some extent the unsuitability of the scientific methods to local conditions. Land is not cultivated intensively except in a few holdings with good irrigation facilities and other conveniences. There are large tracts yet to be brought under cultivation. The yield per acre can be increased quantitatively and qualitatively by proper cultivation.

On the hills a mixed crop of cumbu, ragi, millets, turmeric etc., is cultivated. This is known as *Podu* cultivation. A spot is selected and cleared of trees. After a few days the trees that are cut are set on fire and reduced to ashes. This makes the soil more fertile. When rains begin, seeds are sown and left to grow with the aid of nature. In spite of his negligence, the sower will gather a good crop. He will repeat the cultivation for three or four years after which he will not have such a good crop as the fertility of the plot diminishes. He abandons the plot and prepares another plot. His abode is a small hut with bamboo enclosure. A group of houses, in several cases only five or six, constitute a village or *gudem*. The *podu* cultivation destroys the forests. The soft earth will be washed away and afterwards instead of luxuriant forests there will spring up scrub jungle in the place. After some years, the scrub jungle is again interfered with for *podu* cultivation and the spot is rendered barren and devoid of any soft earth. It is also opined that the landslides during floods are due to *podu* cultivation in the Agency.

SYSTEM OF LAND-TENURE.

Ryotwari Tenure.—Under this system, the ryot holds the land direct from the Government subject to the payment of kists and there is no restriction on the ryots' power of alienation. This system prevails in the Government taluks of Golugonda, Sarvasidhi

and Palakonda. The land revenue payable by the tenants is subject to revision once in thirty years.

Zemindari Tenure.—Under this system of tenure the Zemindars hold the estates subject to a lump sum payment known as 'Peshkash' while the tenants of the Zemindars hold the land on payment of a fixed rent. The 'Peshkash' payable by the Zemindars and proprietors of Estates was permanently settled in the beginning of the nineteenth century. The Estates' Land Act of 1908 conferred upon the Zemindari tenants occupancy rights and limited the power of the Zemindar to enhance the rent payable by the tenants except by a suit under the conditions and to the extent prescribed in the Act. The occupancy right of the tenants is alienable without restriction. This system of tenure prevails in the Zemindari tracts of the district.

Inams are lands held on a nominal assessment called 'Quit-rent'. There are whole Inam villages and Mokhasas in the various Zemindaries subject to the payment of a small amount of 'Kattubadi' to the Zemindar. The tenants cultivating Inam lands have no rights of occupancy and can be ejected at the will of the land-lord. There is no limit as to the time or extent to which the rent can be enhanced by the land-lord.

Agricultural Holdings.—The process of partitioning and re-partitioning of property by the members of a joint Hindu family has been reducing the plots under cultivation into uneconomic holdings. The cultivating tenants are also responsible for further fragmentation of the already small holdings by division among themselves, i.e., their children or sub-tenants. To illustrate this, let us suppose that the family of the cultivating tenants consists of a father and sons, living and cultivating the land jointly. The sons desire separation from the father and other brothers. The holdings are therefore divided among themselves and cultivated separately, each member paying his share of the rent due to the landlord. This method of fragmentation is economically unsound but has been allowed to go on unchecked as a matter of course. The rational and economic method consists in giving to each shareholder certain contiguous plots without involving fragmentation of any individual plot. Of course, there will be differences in fertility, accessibility to water and other conveniences and inconveniences for which some sort of adjustment will have to be made.

This tendency of fragmentation should be arrested and efforts have to be made to consolidate the small plots into larger economic units by a re-distribution of the present holdings. This can be

achieved by the establishment of representative and impartial arbitration panchayats.

The smallness of the size of the plots is unsuitable for profitable cultivation. The yield is only a fraction of what it might be otherwise. There is considerable waste of crop-yielding space occupied by the bunds. Proper tillage is hindered. Large plots retain moisture for a longer time. If the present small plots are consolidated into larger units of one to two acres in extent the yield per acre is bound to increase. I would even suggest the drastic step of introducing legislation prescribing the minimum size of agricultural plots.

Industries and handicrafts.—Industrially the district is very backward. There has been a decay of the cottage industry of spinning and weaving and other village arts and crafts which used to supplement the earnings of the cultivating classes. For about four months in the year the cultivators have no work in connection with their agricultural operations and the spare time can be profitably utilised if the cottage industries are revived.

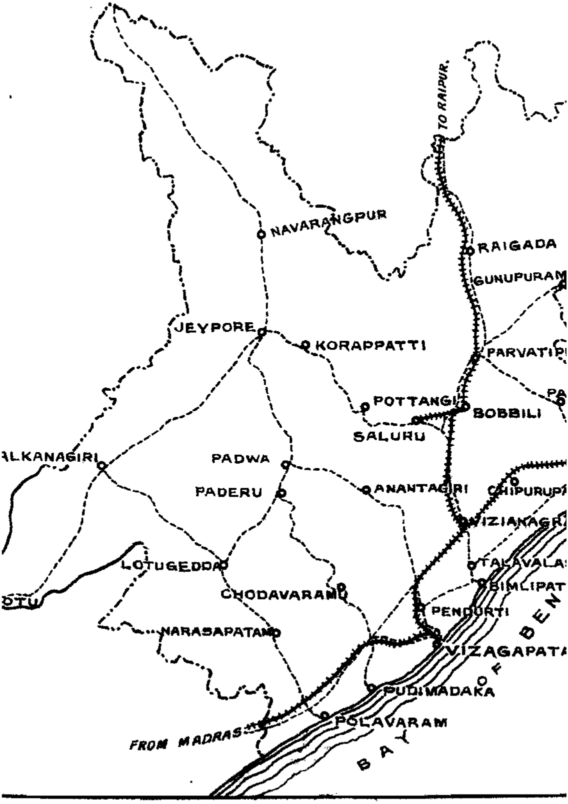
There are jute mills at Chittivalasa and Nellimarla. There is a distillery near Vizagapatam owned by a private Joint Stock Company where arrack is manufactured. Numerous rice mills flour-mills, decorticators for shelling ground-nut, etc., have been established during the last decade. Mills for pressing oil are not popular. Oil is extracted from country wooden mills worked with animal power. These mills are to be found in almost every village and the business of extracting oil from gingelly, ground-nut and castor is the monopoly of a particular caste known as the 'oil-monger caste.'

Leather tanning is carried on at Vizianagaram and Jeypore. The Agency yields a plentiful supply of the bark and other tanning materials required for the process. The industry is mainly in the hands of Muhammadans. This district has a large business in fibre which may be developed as a by-industry to supplement the earnings of cultivators.

Pondur is noted for its fabrics—hand spun and hand-woven. The fabrics are noted for fineness of texture, durability and a peculiar stiffness not possessed by mill-made cloth of the same fineness. The forest region contains various species of soft timber trees and bamboo which can be developed on a commercial scale for wood-pulp used in the manufacture of paper.

The ivory works of Vizagapatam are noted for fine finish. Beautiful lacquer-work toys are made at Nakkapalli and Srungavarapukota. Brass and bell-metal works are carried on at Kotapadu, Anantavaram, Lakavarapukota and Bobbili. The

MAP OF
VIZAGAPATAM DISTRICT
SHOWING
MEANS OF COMMUNICATION.



REFERENCE

-------- ROADS.

manufacture of indigo from the leaf of the indigo-plant was, once, a thriving industry but the competition of synthetic dyes manufactured in Germany gave a death-blow to this industry.

Fishing.—The district has a sea-coast of about 140 miles. The possibility of deep-water fishing with the aid of steam-trawlers has to be tried. The Parvatipur-Raipur Railway which affords quick transit facilities should stimulate the fish trade of the district with the Central Provinces and the Agency tracts, where fish obtains a good price. The fishing industry is in the hands of fishermen who are very backward in education and financially poor. The Fisheries Department supplies to the fishermen, salt at reduced prices to encourage the industry. Fish oil is also extracted which is used for tanning and fish manure is of considerable value.

Means of Communication:—A railway line runs along the coastal plain roughly parallel to the sea-coast touching some of the important towns, namely, Yellamanchili, Anakapalle, Vizagapatam, Vizianagaram and Cheepurupalli. Another railway line connects Vizianagaram with Raipur in the Central Provinces and touches Gazapatinagaram, Bobbili, Salur, Parvatipuram and passes through Rayaghad and Bissamcuttack taluks.

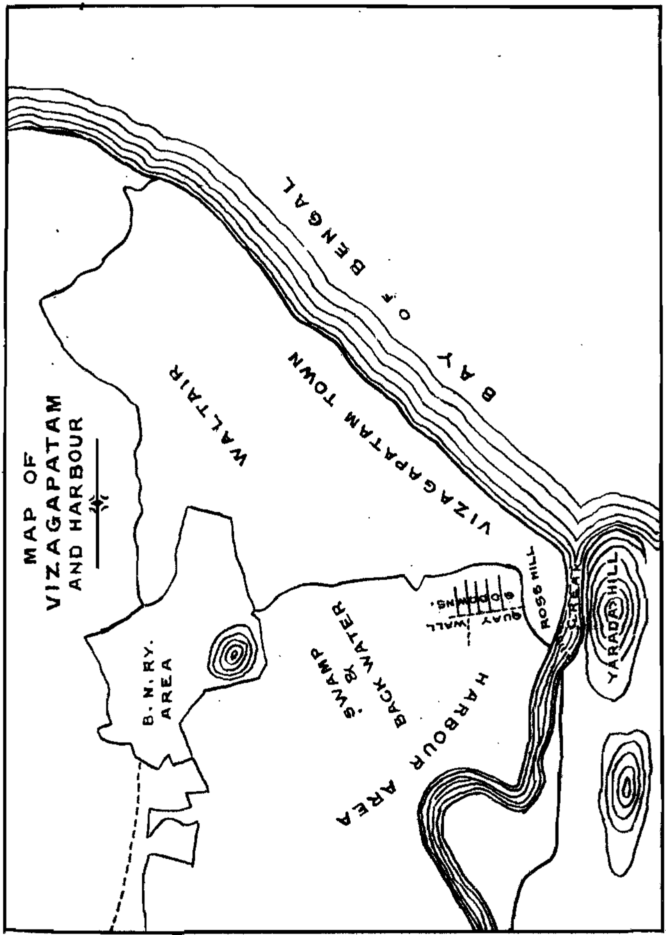
Roads.—The grand trunk road runs along the sea-coast, almost parallel to it as well as the railway line already referred to above. Some of the important towns it touches are, Yellamanchili, Anakapalle, Vizagapatam, Bimlipatam, etc. There are five roads running breadth-wise from the sea-coast across the plain and the three thousand feet plateau descending into the plateaus of Malkangiri and Jeypore. Agency produce is brought to the plains and taken to the ports by these roads. These roads are:—(1) Polavaram to Narasapatam via. Nakkapalli. This road is extended over the three-thousand feet plateau passing by Lammasingi, Lothugedda, Paderu, Padwa, Jeypore, Nowrangapur and Pappadahandi to Bastar. So it will be seen that there is road communication from the sea-coast right up to the other end of the district. (2) The second road is from the port of Pudimadaka passing through Anakapalli, Chodavaram, Madugula and joins No. 1 road at Paderu. (3) The third road is from the port of Vizagapatam passing through Penduri, Lakavarapukota, Srungavarapukota, Anantagiri and joins No. 1 road at Padwa. (4) The fourth is from the port of Bimlipatam passing through Vizianagaram, Gazapatinagaram, Salur, Pottangi, Koraput and joins No. 1 road at Jeypore. (5) The fifth road is from Chicacole passing by Palakonda, Parvatipur, Rayaghada, Bissamcuttack to the Central Provinces. In addition to these there are other roads connecting different places. In the Malkangiri plateau one

line connects Jeypore and Motu passing by Govindapalli, Malkangiri, and Mannimkonda. Another line connects Malkangiri with Lammasingi in the Golugonda taluk passing through Balimal, Kondakamberu, Dharakonda, Gudem and Chinthapalli. Still another line runs from Parvatipur to Gudari through Kurapam, Lakshmipuram and Gunupur.

Vizagapatam Harbour.—Vizagapatam lies midway between Madras and Calcutta and is connected by railway with all parts of India. It is therefore of great strategic importance. Vizagapatam was originally intended to be a premier naval station to safeguard British interests in the east. The original intention was given up on the completion of a naval base at Singapore. Therefore Vizagapatam is now destined to be developed as a commercial port. The portion of the country extending as far as Bezwada, Hyderabad, Nagpur and Cuttack might utilise this port especially for the trade with the eastern countries provided facilities for shipping, insurance, banking, ware-housing, etc., are available here on terms as advantageous as those prevailing in Calcutta, Bombay and Madras. These are to be provided for by Shipping Companies, Insurance Companies, Exchange Banks, Ware-house owners and the Railway Authorities in the matter of concession rates of freight, supply of wagons, etc. It is also necessary that the harbour should be provided with the requisite equipment for loading and unloading of cargo. The existence of hill ranges in the immediate north and south of the harbour and the fact that the harbour lies inland to the west of the City afford excellent protection to steamers against the fury of winds and storms. Vizagapatam harbour has several points of exact similarity to the Port of Durban, viz., position with reference to the country, protection, hinterland, communications, etc.

Trade.—Trade with and in the Agency is worthy of notice. There are weekly fairs at Salur, Palakonda, Kasipatnam and Krishnadevipeta. These are the outposts to the Agency and marts of hill-produce. Trade in the interior of the Agency is carried on by 'brinjaris' who carry the goods on pack-animals. Salt, salt-fish, chillies, tobacco, jaggery, cocoanuts, coloured fabrics, etc., are exchanged for saffron, mustard, ginger, honey, wax, hides, lac, tamarind, fruit etc. The merchants at the outposts buy these and carry on considerable trade with the plains. There is regular cart-traffic from Vizianagaram to Jeypore for bringing paddy to the plains and for taking such articles as are in demand in the Agency. The village sowcar who is also the money-lender buys the crop from the cultivators and sends the same to the nearest town.

FIG 12.



JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

The village sowcar finances agricultural operations and sells to the villagers the articles required by them, such as cigars, salt, kerosene oil, rice, etc. The sea-borne trade is carried on through the ports of Bimlipatam and Vizagapatam. The manganese ore extracted at Garividi is exported from Vizagapatam. The export of gingelly seed, jute, ground-nut, myrabolams, etc., is carried on through the port of Bimlipatam, as this is nearer Vizianagaram, which is the collecting centre of these articles. The future of Vizagapatam port has already been referred to.

Diseases—Small-pox is of common occurrence but cholera is rare. Beri-beri is a general complaint in the littoral area. Malaria and spleen enlargement prevail mostly in the Agency tracts. The hill-tribes are immune to malaria infection probably due to their habitation in the Agency tracts from their birth. It might also be inferred that the blood of the hill-tribes contains such poison as is capable of resisting malaria attack. It might be stated that the district is healthy enough for human habitation and compares favourably with other districts in this respect.

CONCLUSION.

This brief survey may be concluded with a review of some of the outstanding features of the economic life of the people and a few suggestions to augment and stimulate the economic prosperity of the district.

A Ryots' Association has to be organised to promote the welfare of the cultivators. It might consist of different sections (1) for the cultivators enjoying occupancy rights under the Zemindari and Ryotwari Systems, (2) for cultivators of Inam lands who do not possess occupancy rights, and (3) for such other sections as might be deemed necessary to protect special interests. All these different sections have to be federated into one General Association to deal with problems of common interest, viz.:—

(1) To preserve their just rights and secure for them, generous treatment at the hands of the landlord, to afford them all opportunities conducive to their prosperity as cultivators.

(2) To organise, on a co-operative basis, the supply of seed, agricultural implements, manures, live-stock, and other requirements.

(3) To organise, on a co-operative basis, the marketing of agricultural produce so as to obtain to the cultivator the maximum price.

(4) To afford long and short-term credit facilities for carrying on the agricultural operations, payment of land revenue, and for other requirements.

(5) To revive suitable cottage industries which will enable the cultivators to supplement their earnings and to utilise the unused labour-power to the fullest advantage.

(6) To banish ignorance, poverty and idleness by suitable means.

(7) To promote their self-respect and secure for them proper recognition of their status in society as producers of wealth.

(8) Such other aims leading to a progressive state of healthy development of the agriculturists.

It might be said that the present state of development is so low that the time is not yet ripe for such high aims. It has to be pointed out that there cannot be any progress by merely waiting without making the necessary efforts and that determination and reliance on self-help will certainly bring about progressive development in course of time. Failures and short-comings will then be stepping stones to success.

The second outstanding feature is the absence of co-operation among the various landed interests, i.e., the Zemindars, the Government and the proprietors of whole Inam villages and Mokhasas, so as to secure co-operation in developing well-planned irrigation schemes and systems for tapping sources of water-supply.

Rainfall in the coastal plain is inadequate characterised with seasonal irregularities. There are no big rivers with a perennial supply of water and hence the dependence upon artificial irrigation devices, chiefly tanks and wells supplemented to some extent by river anicuts. The degree of co-operation that can be secured on the lines mentioned above indicates the extent to which the productive capacity of land can be developed. The importance and need for dealing with this proposition will readily be conceded by all those who are aware of the present distress of water-scarcity and who can visualise the enormous improvement that can be achieved by concerted action. This problem has, of course, to be investigated by a committee of engineering experts appointed by the landed-interests organisation. A liberal attitude of give-and-take combined with mutual concessions and sacrifices should predominate, in order to achieve anything substantial.

The Agency tract affords ample opportunities of localisation of minor forest industries, developing plantations and agriculture and for the exploitation of the immense forest and mineral wealth. The existence of forests should make it possible to establish the lumber industry and the manufacture of wood pulp from bamboo

specially in the vast area of Malakangiri, Gunupur, Andra, etc. Costly machinery is not necessary for the manufacture of wood pulp. The pulp so manufactured might be supplied to the Carnatic Paper Mills established at Rajahmundry. Enterprise and capital are necessary to work the schemes and it is hoped that they will not be wanting if an earnest effort is made. The rivers afford opportunities for generating hydro-electric power which can be used in industries.

The coastal plain is admirably suited for the growth of fruit-bearing trees and for rearing sheep and cattle. Dairy farming should be specially experimented in this region. The completion of the harbour develops the commercial activities of the district in all directions. The changes are bound to occur sooner or later, depending upon the degree of effort that is made to achieve them.

With such potentialities knocking at the door, it is incumbent upon the people of the district to shake off the proverbial lethargy and conservatism, rise to the occasion and commence practical work before others from elsewhere discover the possibilities and step in. The leaders, landed aristocrats, capitalists and people of the district have therefore to bestow their serious attention upon these matters and pioneer the work of development.

Last, but not the least important item is that of providing the requisite education, facilities in commerce, engineering, agriculture, industries and other useful vocations. The organisation of higher courses in the various faculties has to be taken up by the Andhra University and the lower or school courses may be organised by Government, local bodies and zemindars.

The Geographical Evolution of India

By

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The subject I have taken for this evening's lecture is "The Geographical Evolution of India." My introduction to the subject will be fairly long as, otherwise, I am afraid most of you will take the history of India's evolution, as a mere unpublished fable of Aesop.

It is said that the idea of evolution, whether it be in the case of the living. such as animals and plants, or of the non-living, such as mountains and rivers, is not as popular as it should be. That is so—because even from our infancy we are trained to believe in the special and individual creation of anything and everything around us. Sometimes, this drug is administered to the degree of an over-dose, with the result that children of even literate families think that a clock and an electric fan are creations of God. Surely, it is a conception which none would like the children to have—a conception highly ludicrous in itself. To men of science, that animate and inanimate forms of matter are creations which individually engage the attention of the Almighty, look equally ludicrous. But on this account, the man of science is no atheist. The scientist tries to the very best of his ability to understand the meaning behind all forms of matter. The natural scientist in thus trying to find out why two animals, or two plants which are extraordinarily similar, have yet striking dissimilarities, has hit upon the "Theory of Evolution." He has discovered that even the most complex organism, such as man, has evolved from simpler types of men that once existed, these from still simpler types and so on. In the course of such an investigation, he is at one stage faced with the problem—what is life? At that stage he tries to seek his explanation in the forces of nature—a conception not different from the idea of God. Thus faith in Evolution and faith in God are not principles antagonistic to each other.

"Evolution of Land Forms" is not a difficult subject to understand. By evolution of a continent like that of India is meant that ever since the origin of the earth, the physical features of India have been gradually changing, till at last they are what they are to-day. That is, the mountains, the rivers and the seas have all

their own private histories. There was perhaps a time when there was no Bay of Bengal, no Himalayas, no Ganges and so on. Judged by the past history, there is nothing wrong in the surmise that the physical features of India are bound to be vastly different at some future date from what they are to-day.

It is quite possible to conceive that a layman is not inclined to swallow this idea like a pill. Reasons are wanted. Newspaper readers should find no difficulty in giving credence to this idea of change in the physical features of a country. For, almost every other day, there are reports in the papers of earthquakes, volcanoes, of floods, of storms, and of landslips. These bring about considerable changes in the regions they visit. Thus the Kangra earthquake of 1905 is said to have raised the level of Dehra Dun one foot with respect to Mussoorie; it was a volcanic eruption that brought into existence the magnificent Lonar lake in the district of Buldana in Deccan—a lake which is one mile in diameter and 300 feet deep. These agents of nature, therefore, vitally affect the district or districts which they visit. But such changes are mere flee-bites on the surface of the country of which the district or districts form a part; they are not even that to the earth taken as a whole. But a hundred-thousand such flee-bites at different centres in a country will bring about a perceptible change—a perceptibly different relief feature. The cumulative effect of such repeated disturbances would therefore be of no mean magnitude.

Not merely such somewhat violent activities of nature, but also activities that are taking place slowly and continuously for enormous lengths of time, contribute to changes in the geographical features. The gorges made by rivers and silting at the mouths of rivers to form deltas are examples. The earth's facial expression is therefore changing from hour to hour and from minute to minute. Yet, it is not noticeable, as the change is inconceivably slow. If, however, a retrospective view of the changes for, say, a million years is taken into account, then comes to light the part played by these docile agents of nature. Indeed, river projects like that of Mettur and Sukkur, the opening of means of communication like the Panama and Suez canals, tunnelling, boring, mining, etc., all quietly contribute to change the features of a country. Even quarrying, raising the road-level irrespective of the levels of houses on either side—so common a feature of Madras—contribute their mite also towards the same end. Even the work of the Corporation of Madras as a geological agent, whatever may be its work in other directions, cannot be under-estimated.

That such slow processes are capable of bringing about changes of any magnitude at all may look fantastic. But it is not so. Take the analogy of the growth of an individual. The loss of an eye, the amputation of the arm or leg or a disease like Tuberculosis are bound to bring about sudden changes in one's expression. These are like the violent disturbances like earthquakes and volcanoes. Even a crop, for the matter of that, may change a man's looks. But even in the cases of individuals, not affected by such sudden shocks, there remains the fact that the expression of infancy is not that of maturity, that of maturity not that of old age. The change from one stage to the other goes on taking place imperceptibly and continuously every minute and every second. Similarly it is that the atmosphere, rivers and glaciers are contributing their quota every minute towards the metamorphosis of land forms—which metamorphosis is capable of recognition only after some millions of years.

This means that the evolution of a country is not measurable or even perceptible in succeeding decades or centuries, but only in succeeding periods each of some million years' duration. A new "time sense" has thus to be developed without which it would be impossible to comprehend the changes the world has undergone ever since its genesis.

Just as in Indian History, it has been found possible to recognise a Hindu period, a Mohammadan period, a British period, each period named after the then government, so also it has been found possible to characterise periods by the kind of life that dominated the earth during that epoch. Thus the recent period is called "The Age of Man." For, of all creatures now living that one which has characteristics remarkably its own such as indomitable energy, a keen perception, a resolute will and above all the faculty of speech is the animal man. He has been in this world for the past two millions of years and probably for even three millions of years. Of course the early man was not the civilised brute of modern days but an uncivilised brute. But does not this mean that there was a time when there was no man on earth? Quite so. There was a period when there was no man but which was characterised by other peculiar animals. In that way the age of mammals, the age of birds, the age of reptiles and the invertebrates have been recognised. These ages are capable of further divisions into shorter periods of time. Thus there is a unit of time—a time scale which covers some millions of years.

It would be at this moment quite pertinent to ask a question. Where are the evidences to say that some millions of years ago, there lived different types of animals and plants? How has it become possible for us to study their form, structure, habit and mode of life. The evidences are in the rocks that go to build the earth. All are familiar with at least the two rocks granite and sand-stone. On a careful examination of the granite it is found to be made up of some constituents which are glassy, others milky white, others mica. Not one of these shows any definite external crystal form. Sand-stone on the other hand shows a parallel arrangement of the sandy grains. Layers are distinct in the rock mass. Some impression of shells or shells themselves may be noted. The granite is the one formed from a molten material and is called igneous rock. The sand-stone as it is formed by water is called an aqueous rock. It is also named a sedimentary rock. The mode of sand-stone formation may be seen in the Madras Beach. There in carefully made pits it is possible to make out the same more or less parallel layers. These are formed by deposits of fine sand left by successive waves. The first wave as it breaks on the shore leaves its deposit of sand; the next wave its one over the first and so on. This goes on continuously with the result that a deposit of even 500 feet thick may be formed. The bottom layers get compacted and hardened by the pressure of overlying layers. Water percolating through these deposits, if it carries iron or lime matter in solution will deposit the matter and so bind the mass of sand. Thus, it is, a hard sand-stone formation results.

It is quite conceivable that the waves left other objects which they carry with the sand—objects such as skeletons of sea animals, shells, pieces of wood, etc. Lovers of the marina and lovers on the marina may leave their foot impressions; a cyclist leaves the impression of the Dunlop tyre and so on. The hard parts of animals and impressions get beautifully preserved in these sediments. It would be quite reasonable to suppose that in a pile of rocks of say 500 feet deep, the impressions of shells associated with the bottom layers are those of animals that lived at the time of deposition of the bottom layers; similarly those on top, belong to creatures now living. To put it clearly if a sediment just 3 inches beneath the top-most layers contains in it well preserved Dunlop tyre impressions, it means that the sediment was formed after the advent of the Dunlop Tyre Co. This is an exceedingly plain and square way of looking at things; not perhaps quite the way of looking at things by a criminal lawyer of extensive practice.

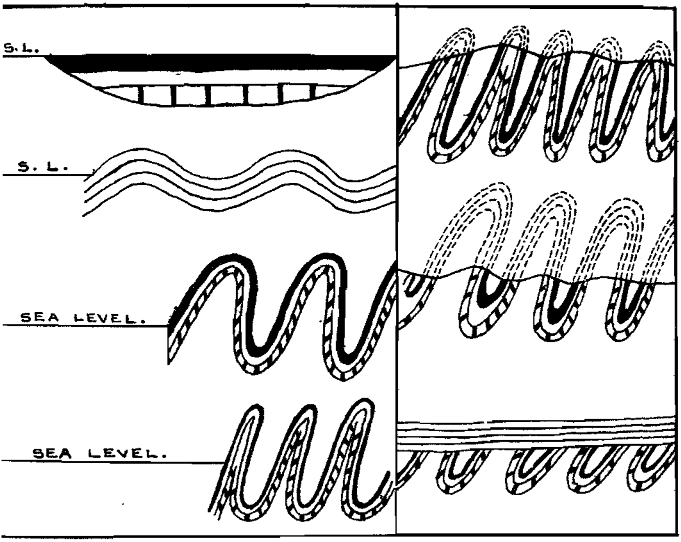
From the nature of the shells or other remains, from the association of animals and also from the nature of the rock—that is, its composition and structure, specialists are able to make out the kind of animals or plants that have lived, their habit and mode of life and the physical conditions that then prevailed. Thus the fossils, as these remains are called, and the rocks in which they are embedded, form the keys to open the gateways of the past.

Such a pile of rocks may be considered Nature's photographic album. Supposing a photographic album, which contain some photographs of X, a number of photos of his father and also of his grandfather—is carefully examined. The set of photos in the first few pages will show that the grandfather of X was a religious orthodox gentleman. The second set—those of X's father —clearly reveals the influence of the West not only in the manner of dress but also in the want of that orthodoxy so characteristic of the grandfather; the next set—that of X, may reveal that he was not merely positively irreligious, but became so anglicised as to take his life-companion from one of the Western countries. Thus if the evolution of a family can be made out from a photographic album, why not grant the possibility of making out the evolution of life and land forms by specialists from Nature's album of rocky material? There is no need therefore for us to hesitate in saying that a large tract of land that contains in it the relics of sea animals—as at Utatur near Trichy—was once under the sea; that the districts of Cuddapah and Kurnool, where there are mountain ranges made up of rocks of the aqueous kind, were once under water; that the Bombay Presidency, which is mostly covered with lava, was once a region of volcanic activity and so on.

They say that the space now occupied by the earth and other planets was originally made up of an extremely tenuous and inconceivably hot gaseous matter. The form of the gaseous body was a sphere, that is, like a tennis ball. This sphere of gas, to start with, was in extent so big as to encompass within it not merely this earth but also the Sun and all the planets now in space. It was spinning like a top and was losing heat into space and so contracted. Gradual contraction is said to have resulted in a gradual increase in the speed of rotation. The effect of this increasing velocity was to make this sphere bulge along the equatorial belt and contract on its rotating axis. The force of gravity tried to compress the mass; the centrifugal force tried to expand it. The force of gravity being the greater, the core shrank leaving a large girdle of gas at the equatorial belt. In this way ring after ring got liberated. Each was made up of a heterogenous mixture

FIG 13.

MODE OF FORMATION OF DHARWAR & CUDDAPAH.



 LITHO: P.N.N & SONS VEPERY.,

of gases. Some gases were dense; others were light; the denser attracted the lighter ones with the result that the ring also became a sphere. It also rotated about the north to south axis travelling at the same time along the route occupied by the ring. This infant gaseous spheroid in course of time delivered another ring which developed into a sphere. In the meantime the original mass might have delivered a second issue—that is, there are now four spheres of which the relationship between two is the relationship of an uncle and nephew. Always, these spheres conformed to rotational and orbital motion. Eccentricities of movement are also noted. For the purpose of this lecture let these eccentricities be taken as analogous to eccentricities of individuals in families. The original spheroidal mass is the Sun and the other spheres are the other planets of the solar system. Astronomical investigations of the position and movement of planets confirm to a good extent the correctness of this hypothesis.

The earth developed from one such spheroidal mass of gas. Loss of heat resulted in an incandescent molten sphere, with a dense gaseous envelope—and still later in a sphere with liquid inside and a crust on top. This crust would therefore be a mass of igneous rock which is probably the basement of all the other rock formations of the world. Further contraction developed corrugations on top of the crust; while water vapour which had by this time separated itself from the dense atmosphere, condensed in the hollows. Thus were formed the primaeval oceans. India, therefore, was not in its infancy differentiated from the rest of the world. It had an igneous rocky covering with seas here and there. The waves of these primaeval seas attacked the igneous terrane; the Sun's heat disintegrated the rocks; the rains washed the rocky matter into these hollows. Secondary rocks were thus formed. Now and then, the new-born earth, yet hot in the interior, gave liberal injections of molten rock to these aqueous rocks and changed them almost beyond reeognition. Such metamorphic rocks—as they are called—are now lying over the primary igneous rocks in many places in India.

But instead of being horizontal, they are seen folded with the crests of the folds beheaded. Rock masses get folded only under extreme pressure: and the folds lose their crests when subjected to wear and tear by atmosphere, rain and such other agents of Nature. So, it is quite obvious that the primeval seas became land, experienced considerable pressure and received molten rocky injections and subsequently got worn out. All these happened in the Archaen-Dharwar era of the Geological Time scale.

After thus getting weather-beaten, and losing much of what they collected while under water, these regions of India together with other regions, that were not originally under water, sank deep down to bring about the seas of the next Purana era. These basins gathered new sediment, which spread themselves on the beheaded tops of the older ones. The sediments—new at that time —but now possibly over hundred million years old, are seen forming the hills of Cudappah, Kurnool, Tirupathi and even Nagari close by. That is, the middle portion of the eastern side of the Southern Peninsula was covered by a sheet of water. Central India and the site of the Vindhyan range are also made up of similar rocks, indicating the prevalence of seas, in these two areas as well. Patches of similar rocks crop out in the intervening portions of these three chief regions and even in the Himalayan area. Not improbably, therefore, these three seas were united at one time or another to form a big sea, its southern shore reaching very nearly the latitude of Madras and the Northern shore extending even perhaps beyond the line of the great peaks. It must not be imagined that throughout the Purana era, the sea existed preserving the same coast-line; some regions became land much earlier than others. Some of these new lands got again covered by the sea. The Purana era saw also many volcanic disturbances. The famous Golconda diamonds crystallised probably from the volcanic rocks of these times. When these rocks, in the ages that followed, got disintegrated, the diamonds also got loose and formed a part of the sedimentary rock that formed in course of time.

In the course of the next few millions of years, the old Purana sea gave place to a continental area, as a result of its recession northward. It receded so far north, as to have its southern shore, the line connecting Hazara, Kashmir, Spiti, Garhwal, Kumaon and Nepal. Westward it extended only as far as Afghanistan and Hindu-Kush without merging into the European seas. Eastward, it extended thro' China to N. America. There was a gulf penetrating the site of the Salt Range. By the time, the Purana sea thus got shrunk, life appeared on earth ushering the Dravidian era of the Indian Geological Time scale—an era characterised by invertebrate life.

This distribution of land and sea kept on only for some time —the time called the Cambrian. For, a retreat of the gulf from the Salt Range began with an advance of the Central Asian sea westward till at last, in the later Dravidian times, the Central Asian sea got connected with the seas of Europe. In the South of the sea, lay a stretch of land, parts of which are represented by the present day Africa, India, Australia and S. America.

FIG 14.

PURANA INDIA.

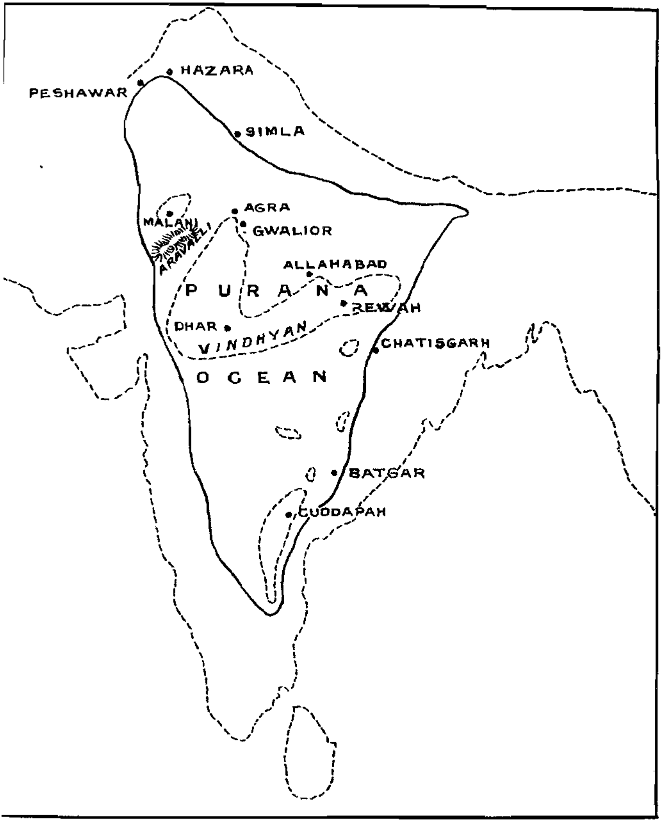


FIG 15.

INDIA IN DRAVIDIAN ERA.

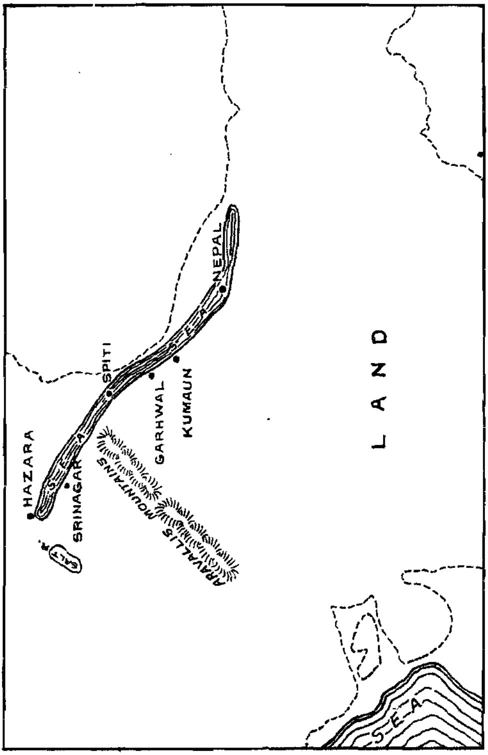
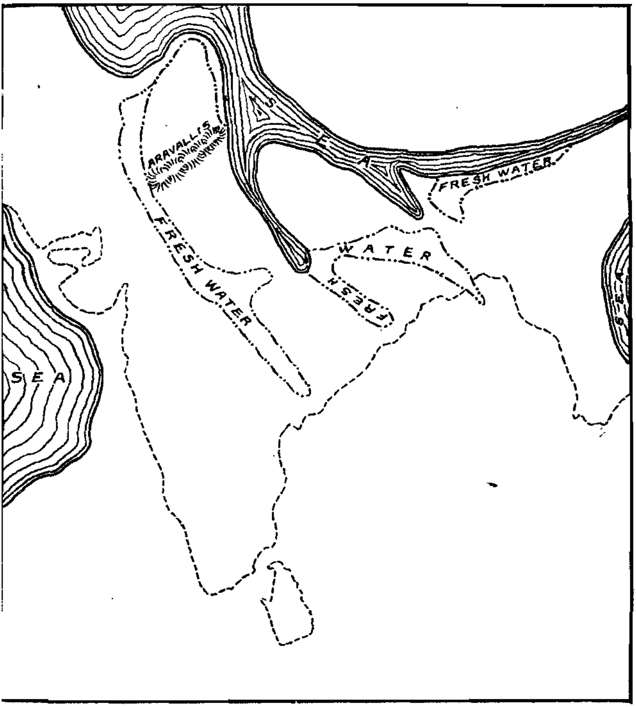


FIG 16.

INDIA OF PERMIAN PERIOD (DAMUDA.)



The mighty changes in the Geography of the country, that took place in the mid-carboniferous times, marked the commencement of the next and latest era—the Aryan Era of Indian Geological History. Northern India, Tibet and the greater part of China were inundated from the West, thus enlarging the width of the Central Asian sea—the Tethys of Geographers. This Tethys that encircled the whole earth, and that separated a Northern from a Southern continent existed for a very long time—from mid-carboniferous to the late cretaceous of the Standard scale. It collected in it the sediments of the whole period, faithfully preserving in these sediments the relics of animals and plants that existed right through this time. Thus, here was prepared a beautiful album of marine life.

India, then formed a part of the big Southern Continent, from which had yet to develop not merely India, but also Africa, Australia and S. America. The prominent physical features of the country during the upper carboniferous times, were a magnificent mountain range extending from Deccan to beyond the limits of the Himalayas, and four big basins separated by high lands. The Aravallis are the relic of the mountain range. The basins occupied the area of the present Satpura range, the Wardha-Godavari area, Mahanady basin, and a big tract encompassing within it the Son valley and the Damuda valley, the Rajmahal Hills and the Giridhi coal field.

In the succeeding Permo-carboniferous times the whole continent was covered with a vast sheet of moving ice. Glaciers covered the peaks of the then lofty Aravallis and radiated towards north, floated as ice-bergs some of which were wafted towards Kashmir and Hazara and others towards Simla. They also moved towards the lakes and deposited their debris into them.

The retreat of the glacier brought again a sea in the region of the Salt Range and Kashmir. A narrow gulf extended, thro' the heart of India from the Salt Range up to New South Wales, as otherwise the same species of Eurydesma could not have lived at that time in these widely different areas.

About the mid-permian times, certain regions of India as a result of an instability of the crust deep down, developed long fairly parallel cracks, which with time increased in width and depth, till at last the regions between the cracks slowly settled down, giving rise to trenches. Such subsidences resulted in a decided inequality of the surface and were noticeable in the four regions mentioned above. The downward pressure that resulted from the accumulation of deposits on the floors of the sunken

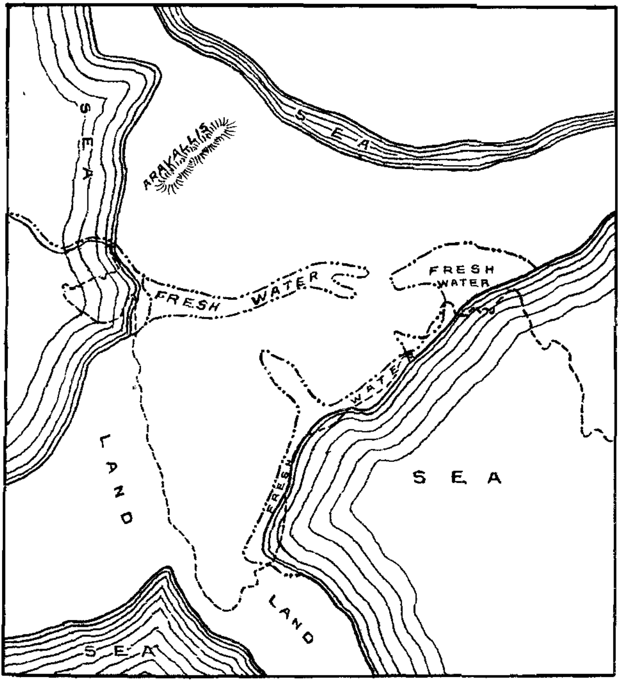
tracts, and the extension of the cracks deeper down, made the floor of the trenches sink further and further. Sinking and accumulation of sediments therefore helped in adding fresh deposits from the upper Permian to the Jurassic times, to the lower Gondavana formations. A beautiful record of many pages of land life resulted. It is only reasonable to suppose that the land that connected India with Australia or Africa would have also experienced sinking of the kind referred to: and wherever there were means of communication with the sea, the waters would encroach into these troughs, and so advance to the North. Thus, as bit by bit, the land subsided, the Indian ocean invaded the areas to form the Bay of Bengal. In course of time, the inland fresh water lakes saw means of communicating themselves with the advancing seas and so developed into rivers. Thus, the Gondavana continent which afforded scope for the free migration of animals and plants from India to Africa or Australia broke up very gradually to form the Bay of Bengal and the Arabian sea. This in its turn meant the gradual transition of fresh water lakes into rivers.

In this period of lakes and lake rivers, the country was prolific of vegetation of the primitive type. The climate was equable. Much of the vegetation was carried into the lakes or the rivers of the times, got conveniently deposited in the sunken tracts so that they escaped being washed out by the agents of Nature. They escaped the powerful disturbances that crumple up rocks so easily. That is lucky. For, the vegetation that collected in these basins has been converted into coal in the course of the millions of years, that followed their deposition. It is this coal that is now worked in the mines of Singareni, Umaria, Giridhi, Jherria and Raniganj. But the material that constitutes the coalfields is vastly different from that of the Damuda area. The former were highly evolved plants while the latter were comparatively primitive. The time interval between the existence of these two kinds of flora is some millions of years. The former is therefore said to belong to the upper Gondavana times and the latter to the lower Gondavana times, corresponding respectively to the lower Jurassic and the Permian times.

In the interval between the lower and upper Gondavana times in the mid-Gondavana or Triassic times the trough formation and the filling up of the troughs that began in the earlier period, continued. But, curiously, the lake basins received no more vegetable matter. Indeed the smiling vegetation of the equable climate—which was so equable as to be a period of summer throughout India in the lower Gondavana times, was gradually annihilated by the slow setting of universal winter—a winter

FIG 17.

JURASSIC INDIA.



bad enough to be glacial. The wintry days over, the climate swung to the other extreme of parched up aridity of the desert type. Plant remains are therefore absent in the Mid-Gondwana rocks of the Mahadeva Hills of the Satpura Range and in the isolated patches of Bengal and the Godavari basin. However, the animals that more readily adapted themselves to these climatic vicissitudes are entombed in plenty in the mid-Gondwana rocks.

The arid climate passed away to usher forth once again a tropical summer so splendidly suited to the growth of luxuriant vegetation. The basins that were yet forming, and the basins not yet filled up, once again received supplies of vegetable matter to be converted into the coal of the upper Gondwana times.

The subsidence of large tracts of land into the interior of India and in the neighbourhood naturally reduced the capacity of the ocean, and made the waters of the sea overflow parts of the continent. Marine transgressions resulted. Along the Coramandel coast, the line connecting Vizagapatam, Rajahmundry, Sriperambatur and perhaps even further South as far as Tanjore, was washed by the sea. North of Vizag, such transgressions took place up to Cuttack. It is therefore obvious that in Jurassic times the Bay of Bengal had come into existence. Such transgressions of the sea, took place later in Jurassic times in N. W. India. An arm of the Tethys, projected as a deep gulf through Salt Range, Western Sind, Baluchistan, and as far as Cutch.

Throughout these geological periods, as was already mentioned, the Tethys existed collecting in it the rocky material, and becoming perceptibly shallower due to the gradual filling up of the ocean bottom. The physical geography of India towards the close of the Jurassic period was as follows: A shallow sea in the Himalayan area extending through Salt Range up to Cutch; rivers more or less parallel to the present peninsular rivers some of them joining the Bay of Bengal; the East coast more towards the West; in the West, between India and Africa with a land connection perhaps much reduced in width.

In the next cretaceous period, this transgression of the sea into the land and the breaking up of the lands to form seas, persisted: the sea invaded the Coromandel coast slightly more, so that the site of the new chord line of S. I. Ry. between Vriddachalam and Trichy was washed by the sea. In the West, the Tethys projected as a deep gulf in the Narbada valley, which is a deep sunken tract of ground of the kind in which was formed coal. Gradually, the earth disturbances became more intense;

the Indo-African continent cracked and cracked at various centres, sank deep down, allowed the Southern ocean to invade the area to form the Arabian sea at a comparatively rapid pace. In the North, the earth disturbances withdrew the shallow Tethys with its projecting gulf, towards the West, leaving only two big lakes in the Himalayan area. Thus in the South, a continent gave room for the formation of a sea; in the North, the sea gave room for a fresh land. These changes only heralded the approach of a mightier revolution. The revolution was in character volcanic. In magnitude, it has perhaps no parallel in the history of the volcanic eruptions of the world. Lava quietly moved forth from big fissures for a considerable time, without bombs and explosions usually associated with the Vesuvian kind of eruptions. Bombay Presidency, Guzerat and Sind suffered most. The intensity of the eruption was felt far and wide. Even Rajamundry so far away from Bombay was flooded with lava. It was lava and nothing but lava covering nearly five millions of square miles. Each lava sheet was on the average fifteen feet deep. Occasionally it reached a depth of 50 feet. The lakes that by this time had shrunk to the size of wide river valleys, were filled up by lava. But the depressions were deep enough for a re-establishment of the drainage which practically persists to-day, as the Narbada, the Mahanadi, the Godavari and other peninsular rivers. Very probably sinking of land deep down vertically, so characteristic of the times, helped in the formation of the river valleys. It is easy to imagine the fate of animals and plants that then lived. The clearing of so much of lava, from the bowels of the earth perhaps further assisted the sinking of the adjoining continental tracts and the complete establishment of the Arabian sea and the Bay of Bengal.

The earth movements that brought about the break of the Gondwana land were felt on the North also. In the late cretaceous or early tertiary times, the pile of sediments in the Himalayan basin was thrust up from the North, North-east and North-west and got intensely folded. The Northern fringe of the old continent in an attempt to adjust itself to these powerful thrusts, gave way. Along this fringe as the pressure continued the rocks were thrown to form the preliminary Himalayan chain. Increase of pressure made these chains rise higher and higher. The enormous mountain building forces also made one mass of rock move over another and brought about fracturing of the rocks. One portion of the rock mass naturally slipped down as the fracture developed bringing about a clear belt of subsidence of the surface. This sunken tract—this trough would naturally become a hydrographic line—a line of a gulf, a lagoon or river.

FIG 18.

CRETACEOUS INDIA.

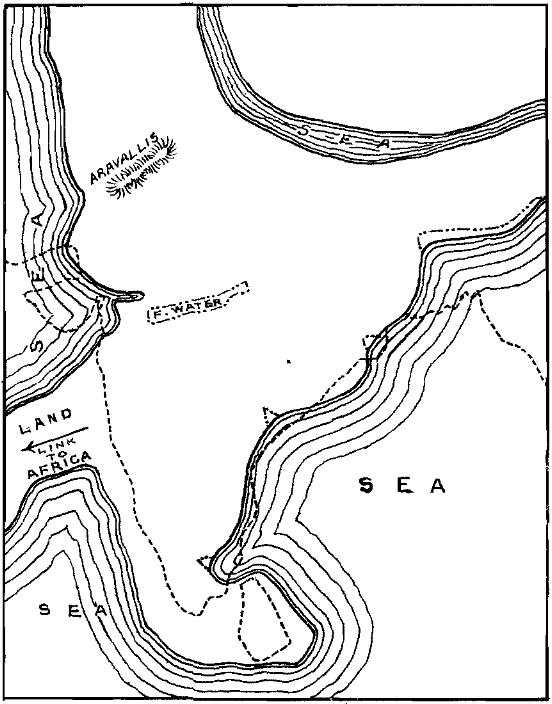
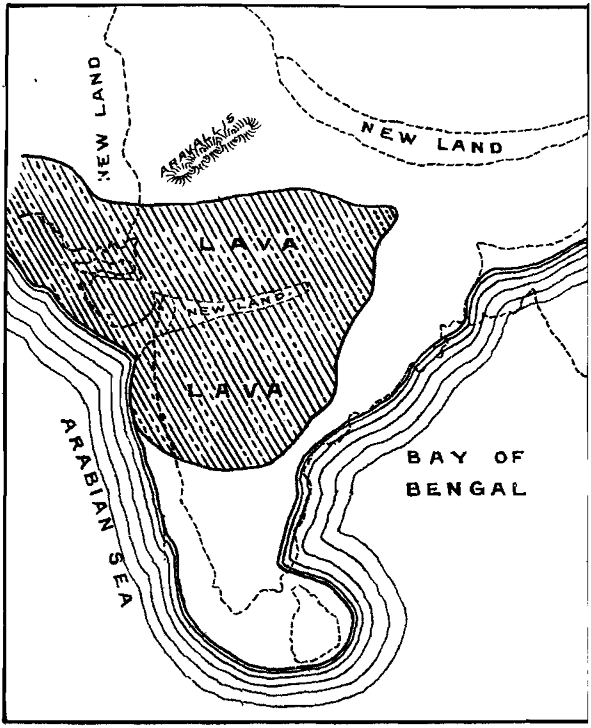


FIG 19.

DECCAN TRAP
EXTENT.



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The deepest and the most outstanding trough that thus got formed with the rise of the preliminary Himalayan chain crossed the continent from East to West—from Assam to Punjab. Other troughs though not of such magnitude also got formed. The Northern portion of the Indus, the Son, the Jhelum, the Chenab, the Ravi, the Beas, the Sutlej, the Gagger and possibly the lower portion of the Ganges had all their births in these troughs. A hydrographic system was thus ushered in the North.

In that big subsidence that extended from Assam to the Punjab, sediments collected; the weight of these sediments made the bottom of the basin sink further allowing more of the sediment to accumulate. This in turn resulted in the portion that contributed the sediment rise higher just as when one scale pan goes down the other rises up. Soon an equilibrium was reached. The deposits once again became the focus of attack of mountain building forces and so thrown into a new mountain. This in turn brought into existence another trough south of the newly formed chain. Thus the forces that made the Tethys region a mountain led to the formation of a hydrographic line; when this line became a mountain, the region South of it formed another hydrographic line. Thus parallel belts of deposits, marking successively the position of the troughs, are recognised.

The first line extended from Baluchistan and Sind to Eastern Afghanistan curving Eastward through the Punjab along the foot of the Himalayas as far as Nainital. This first line marked a marine gulf which was sometimes divided into lagoons and at other times connected with the seas. East of Nainital the hydrographic line was probably continued by a river draining westwards into these lagoons. When the deposits that collected in the troughs became hills, the depression that accompanied South of it collected in it the sediments carried by the numerous silt carrying tributaries and became the course of a mighty river. This river, the Indo-Brahm of Dr. Pascoe "rose probably in Assam, flowed along the Southern border of Bhutan, traversed the Northern angle of Bengal below Darjeeling, skirted the Southern margin of Nepal and Kumaon, proceeded North-westwards through Dehra Dun and Sirmur state, up through the Kangra district into Jammu, thence along the valley South of Rawalpindi, past Makhad, across Kohat to the Bannu plain where it turned to South, past the Shirani Hills and Bugti Hills, debouching ultimately into the Sind Estuary." The fact that the Indus and Ganges contain the same fauna is explained on the hypothesis of single river having flowed across the continent from East to West. The sediments formed in the river were shortly thrown into hills with

the concomitant formation of a river again South of it; rather, the river line was being pushed steadily Southward in the Himalayan area and also Eastward in the Baluchistan section. In other words, the Himalaya was advancing Southwards preparing the material required for its growth in a river flowing along its foot. At one stage the river system in India would have been as follows:—The Indo-Brahm running East to West and South of it the Jhelum, the Chenab and other rivers which had got already formed. These rivers in their endeavour to adjust themselves to the growing mountain cut headward; the Jhelum, the Chenab, the Ravi, the Beas, the Sutlej and the Gaggar cut headward in a North-east direction and captured the Indo-Brahm; the Ganges cut back in a W. N. W. direction capturing the next portion; the Jamna, now the Bengal part of the Brahmaputra, was working its way to capture the same river near its source. The Indo-Brahm itself was on the search for its prey. The Assam part of the Himalayas was rising a little faster than the other portion. So the river working its way headward seized the headwaters of the Chindwin, a tributary of the Irrawady. The Meghna, now an insignificant river in East Bengal, was also receiving its supply from the same source. The Indo-Brahm thus robbed the waters of the Chindwin and the Meghna by capturing their feeder. Thus it got its origin shifted from Assam to the North of the Himalayas. Again it worked its way to Westward till it captured a Tibetan river that was flowing on the other side of the Himalayas parallel to the range. The avaricious Indo-Brahm thus swelled in waters. But it was mentioned already that the Jamna, the Bengal part of the Brahmaputra, was working its way to capture the waters of the Indo-Brahm near Assam. When this happened the whole waters were diverted along this short route to the Bay of Bengal. The Brahmaputra as it is to-day came into existence. A similar story repeated itself in the North-west. The Attock part of the Indus captured the tail portion of the Tibetan river and diverted its waters into India to make up the present Indus.

Thus the Indian rivers invaded as it were Tibet, cut a Tibetan river at the head and tail and brought the booty to this country.

This is the story of the growth of the Himalayas and Himalayan rivers. They are considerably younger—younger in age by some millions of years than the peninsular mounatins and rivers. The Vindhyas, the Western and Eastern Ghats, are merely the stumps of the oldest rocks; they are mountains not because they worked up to form a mountain as did the Himalayas, but because they happened to resist the weathering agents more than

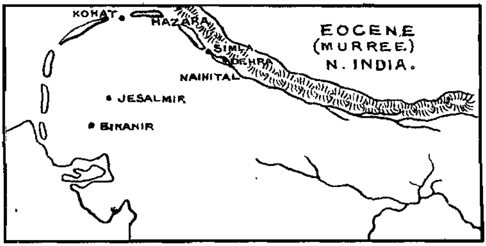


FIG 20

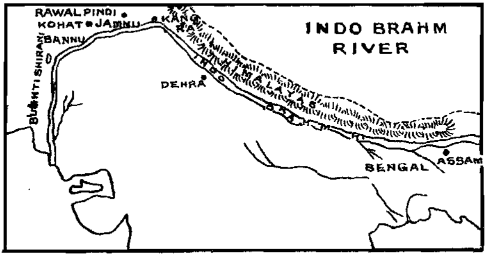


FIG 21.

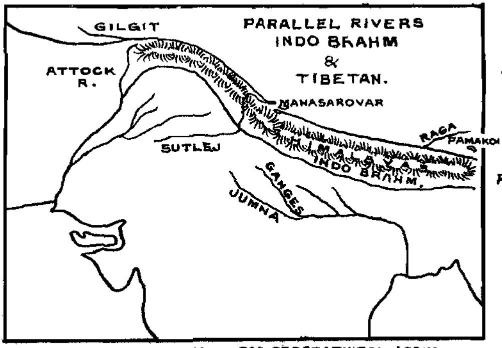


FIG 22

FIG 23.

THE ORIGIN OF BRAMAPUTRA.

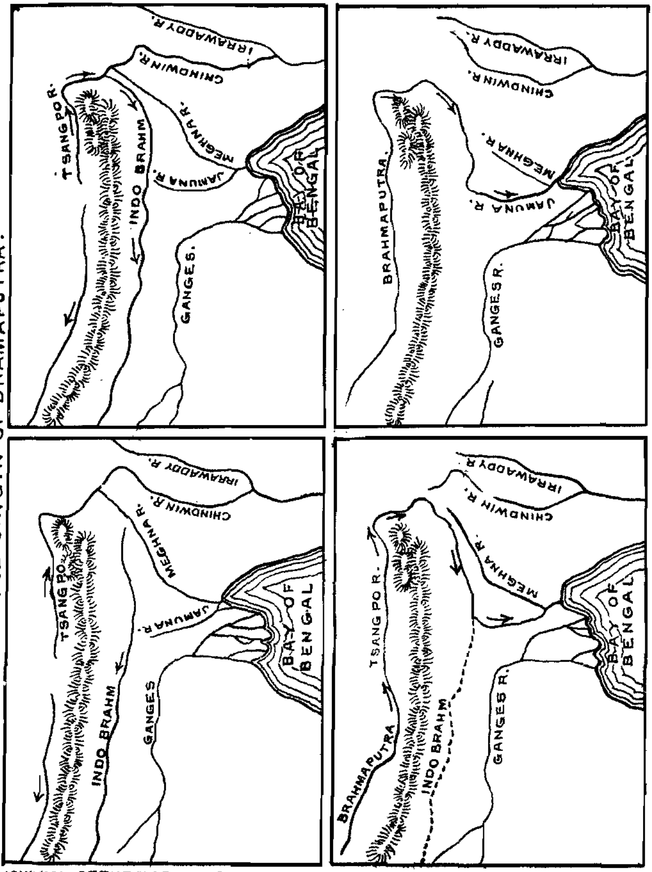
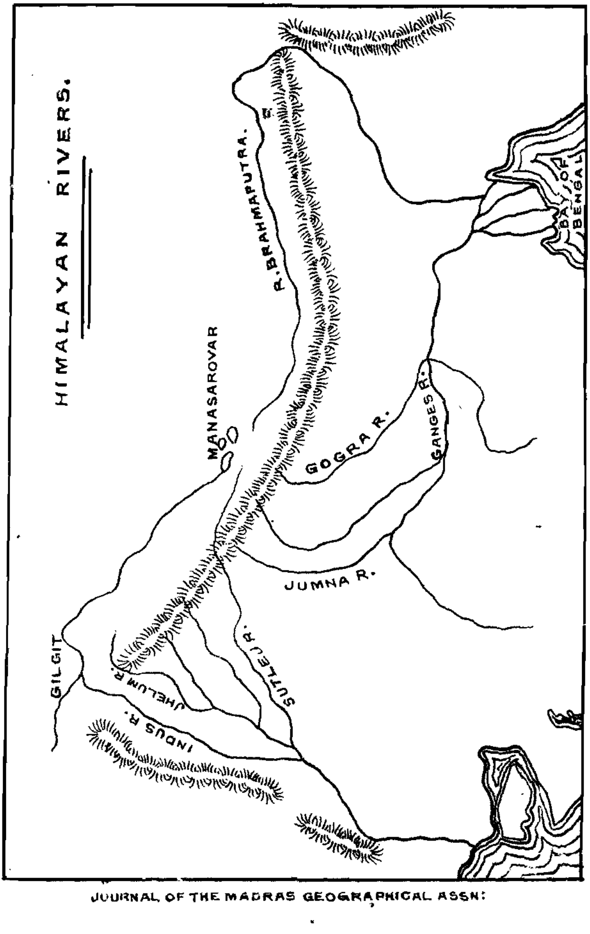


FIG 24.



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their immediately surrounding portions. The surrounding rocks were washed into Arabian sea and Bay of Bengal allowing this to stand therefore in relief with respect to the sea level.

The Himalaya is young; its rivers are vigorous and youthful. But the peninsular region is an old block—a remnant of the old Gondwana continent; its mountains are old, its rivers are sluggish.

The last chain of hills that was added from the South to the Himalayan chain is the Siwalik hills—the hills noted at Hardwar, Jammu and other places. There lived at this time wonderful animals—gigantic in size. The elephants of these times had tusks nine feet six inches long and twenty-seven inches at the base. The biggest tortoise that now lives is perhaps 5 feet long but those that lived at this period were 20 feet long.

But the wonderful life of this age was soon annihilated by a revolution which came in the form of a drop in the temperature conditions of the country. The drop was so great as to cover much of Northern India with a thick carpet of ice.

The evolution of the physical features of India was fairly complete by the time of withdrawal of the glacier, but for the Indo-Gangetic trough which was not completely filled up. Measured N. to S., this belt is now 300 miles in the Western half, and about 90 miles in the other half. Its depth on the average is more than a thousand feet. The man that will live 40 millions of years later—the Superman, perhaps a pigmy with giant intellect, will probably see another range added on to the Himalayas. Or it may be the other way, the Gondwana continent gradually collapse and lead to the formation of inland seas.

Such changes, cannot obviously be taken note of by human beings, whose span of life is nothing, when compared to the geological ages. Yet, we are in a position to take note of the slight changes that have taken place in recent times. The hills near Bombay coast were recently under water; the East side of the Bombay island and the West side of the Vallimukan Bay of the Tinnevelly coast have got submerged as is noted by the forest now under water; land has submerged at Mekran coast; Mahabalipuram has been invaded by the sea; San Thome was once twelve leagues inland. In addition to these, there has been going on the enormous accumulation of the Indo-Gangetic alluvium. These are rather the dying forces which started the Himalayas. These changes, insignificant in themselves, are precursors to some things mighty.

So continents and seas are evolving in their own way. Birth, growth and decay as much characterise land forms, as plants and animals. Earth's facial expression is changing slowly. After some millions of years, the cumulative effect of the kind of changes referred to will merely alter the face of India as we know it.

With regard to Mr. Muthuswami's lecture last evening, I wanted to make a few remarks. I was too lazy to get up and speak. I had given a lecture some years ago (Sir Subramanya Iyer's Lecture) before the Madras University under the heading "Geographical Evolution of India" which was published in the "*Indian Journal of Education*" for August, 1922. Mr. Muthuswami's lecture, though it covered more or less the same ground, was certainly more exhaustive and instructive and also more interesting in view of the large number of slides which were shown by Mr. Muthuswami. I may say that Mr. Muthuswami has considerably amplified and improved upon my lecture. There is one point, however, which, though referred to by Mr. Muthuswami, does not seem to have attracted the attention of the audience to the extent that it deserved, owing perhaps to the richness of the intellectual fare provided by the lecturer. I confine myself to this one point. One striking feature in the physical geography of the Himalayan area is that the big Himalayan rivers like the Indus, the Ganges, the Brahmaputra, etc., all take their origin in the hilly area *beyond the chain of the highest peaks* or the line of the greatest elevation and have cut their way through the hills, forming very deep chasms and gorges across them, which form such a conspicuous feature of Himalayan scenery. We all know that rivers always flow *downhill* and never *uphill*. Why should these Himalayan rivers which take their origin in the tableland north of the main range of hills, form an exception and cut their way across the line of hills and debouch into the plains to the south? The explanation is that the rivers are older than the hills; and that the elevatory forces which uplifted the mountain chain must have begun to operate only after the rivers had originated and the main lines of drainage in the area had been determined. It will thus be seen that the Himalayan range of hills is younger or later than the Himalayan rivers. Another interesting inference is that this upheaval must have taken place so slowly that the rivers were not disturbed in their courses by this upheaval. Any violent upheaval would certainly have diverted the courses of the rivers.

That the rivers still continued in their courses is an indication that the upheaval must have taken place slowly so as to enable the rivers to retain their courses, deepening their valleys so as to keep pace with the elevation. This is the explanation for the formation of the deep gorges which are so characteristic of Himalayan land-scape. As the elevatory movement proceeded, the rivers acquired increased powers of erosion and deepened their valleys, giving rise to the deep chasms or gorges which we now see. These deep gorges by the side of the highest peaks contribute to the gorgeous-ness of the scenery and make it awe-inspiring.

I shall be glad if you can find a place for these remarks in your official report of the proceedings of the meeting.

H. NARAYANA RAO.

Extracts from Periodicals

GEOGRAPHY AND THE FILM

THE TEACHING OF FACTS.

The following are extracts from a paper read by Mr. J. Fairgrieve, M. A., at the Annual Conference of the Geographical Association, which is reproduced in *"Geography."*

What we have to teach is real geography, not the things in books, *but the things outside the class-room. It is the peculiar* failing of so much geography teaching that it is unreal. What is the use of knowing that cotton weaving is carried on in Lancashire if you don't know what cotton weaving is? Is it any use knowing that coal is mined in South Wales if you don't know what coal mining looks like? Is it any use knowing that wheat is grown in certain places if you don't know what wheat is like when it is growing and grown? And so on with regard to all the other things of fundamental importance.

It seems to me that we should begin with the things that the boys and girls see around them and then, because they can see so little of the world which is the subject matter of geography, we must begin with pictures, not, be it noted, illustrations, but as the raw basal material.

Further, children learn by experiences. Pictures give experiences. The children are stimulated and demand information about their experiences. The trouble is that you cannot examine experiences, only knowledge of facts, and to some extent of how to handle facts. This is all the worse because the so-called facts, usually generalisations, have commonly been given in words and tend to be reproduced in the same words. Indeed they are often asked for: "You listen to me, because you have to say it back again." The facts given in pictures are not given in words; they are much fuller and richer. Something is always absent in the verbal description so the children never know. In the picture, if it is a suitable picture, that thing is there even if it is not referred to.

THE CHILD INTERPRETS HIS OWN EXPERIENCE

One further great advantage in the picture is that when the pupil has to describe these experiences he has to use his own words, and has a new experience in so doing. But this point should be

noted, for it has a bearing on the results of experiments to compare the value of film teaching with oral lessons. (1) Comparisons have been made almost entirely by testing what facts have been learned, and the experiences have been tested scarcely at all, and it is the experiences which matter. This is bad enough but (2) it quite well may happen that children who have seen a picture may not when tested be able to put their knowledge and experience into words as easily as those who have had no experiences but have merely memorised the words, though obviously the former have learned more not only from the geographical point of view, but from that of language also.

If you have followed what I have said you will agree that there is a prima facie case for the film in teaching. The still picture, lantern slide or other, is suitable when the material is static or at rest, or when analysis is desired. The film, however, ought to be useful when there is movement, when the material is dynamic, and when there is synthesis. Movement is of the essence of life, and the kinema ought to be an aid to teaching those subjects which have a bearing on life and movement. There is, indeed, a good deal of evidence that even in the matter of learning facts the film has advantages.

Eleven years ago the Northampton branch of the Geographical Association reported that as the result of experiment it appeared that those who saw films even without any oral lesson grasped more details than did those who had had a lesson but had not seen a film. In 1925 Philpott, with some rather poor geographical material, showed that the film gave particularity while the oral lesson gave generalisations. In 1927-28 Knowlton, working with probably the best history teaching film made—produced by Yale University—demonstrated that films contributed to a gain in knowledge besides producing more classroom discussion and inducing people to read more widely. In the spring of 1928 Freeman and Wood carried out extensive tests with geographical and science films though we may be permitted to doubt some of the geography and some of the science; but there is no doubt as to the result. The film used in my lesson this morning was a part of one of these films very kindly cut for me by Mr. Tout, of the Kodak Company. The tests were most careful and accurate. The experiment, in which 230 teachers and 11,000 scholars took part, shows that if the same time is given to geography, as taught in the United States by two sets of children of the same mental capacity of which one set uses a film and the other does not, hut has the advantage of all other teaching aids, that group which has seen the film knows slightly more geography than the other. The important fact how-

ever, was not the statistical result but the practically unanimous opinion of the teachers that among other gains were a clearer appreciation of the richness, accuracy and meaning of personal experiences and an increased interest in school work.

WHAT OTHER COUNTRIES ARE DOING

Other lands are ahead of us. In France schools get a subsidy equal to one-third of the cost of a projector, and if they are rural schools one-third more. Film libraries are financed. In 1928-29 the number of films distributed by one section of the education department amounted to 43,500.

Italy provides £ 10,000 a year for the International Institute of Educational Cinematography, and also provides for a national film institute which both produces and exhibits educational films, while films of an educational nature must be included in the programmes of the ordinary picture theatres.

In Japan one-quarter of the schools have projectors and films are issued free of charge, £ 30,000 is spent annually on the production of educational films.

In the United States film libraries are maintained by many State and city educational departments for the 10,000 schools which have projectors. Even in 1923 there were 7,000 projectors in schools.

Holland, Belgium and Canada are all using films in schools, while Russia, of course, uses films in all sorts of ways.

We have something like 200 projectors in schools!

METHODS OF USING FILMS IN EDUCATION

We are faced, then, with this problem of how to use films to the best advantage. The problem is anything but a simple one. It is probable that educational films may be used in many different ways even in the classroom. It is pretty certain that if they can be used in different ways they may have different characteristics in these different circumstances. The whole question of the projectors suited to these different circumstances also arises. It is obvious that there are at least four ways in which films may be used for educational purposes.

(1) The educational film may be shown in the programme of the ordinary picture theatre, as it is compulsory in Italy to do. The trouble is that the audience more often than not walks out when an educational film is shown, and I don't wonder at it. It is difficult for producers to forget what they learned at school, because it was taken for granted there that anything educational is bound to be uninteresting, if not positively unpleasant. This use

of the film does not here concern us, however, and I shall say no more than that the educational film must be interesting and tell a story—in the widest sense of the word story—of some kind. If it has not got sex appeal it must have some other appeal—it must not be dull.

(2) Children may be taken en masse for their instruction to the local picture houses. This has in the past been done, because in fact it was the only way possible. But (a) films shown in this way cannot suit the curricula of all schools, and (b) while 15 minutes is as long as a child can normally stand on one subject without mental stimulus being succeeded by mental intoxication, it is not economic to have such a picture shown for less than 45 minutes. It is, of course, not true that no film can be looked at for more than 15 minutes. There are some, say the Scott film, Nanook, Chang, which hold the youngsters much longer, largely because they are good stories, but these are the exceptions. But if, as I have been told on good authority, 7 minutes is considered the limit of time for such films for adults, it is not likely that children can stand much more than double that time. On the other hand, a mixture of educational films leaves a muddled impression and is scarcely educational.

(3) Films can be shown to children of combined classes of a single school in the school hall. In this case arrangements are easier. The difficulty of the curriculum is not quite so great, and in fact this is the commonest way in which films are shown at the present time. It is probable that this will continue to be a method of showing films which are of general interest, and it is to be hoped that in all new schools provision will be made in the plan and fitting of the building for the installation of a projector. One of the functions of such displays should be to raise the standard of the children's taste so that they would hoot—as I have seen done—a bad film, whatever form the badness may take and however difficult it may be to describe it.

(4) But it is gradually dawning on people that the film has a function in the classroom as an aid to subject teaching, to be used as one uses a blackboard or lantern slide or books or atlas. People, usually not teachers, have been hazily conscious that, for example, geography ought to be taught by means of films. Unfortunately, in the case of non-teachers, teaching usually means telling once, as if youngsters ever learned anything, except very occasionally, by being told once. It is true that children will learn more from a good film than by word of mouth, but one cannot trust to telling entirely, even when the telling is done by a good film.

THE TECHNIQUE OF TEACHING WITH FILMS

Here we are really getting to grips with our problems. How would you use the kinema in the class-room? (a) if you had to put up with what you could get at the present time in the way of films and projectors, (b) if you could get precisely what you wished of films and projectors. You don't know? But it will be much more likely that you will get what you wish if you do know what you wish.

The trouble, just is that the vast majority of teachers, even geography teachers, don't know either what films or projectors are available, or what they wish. The Film Commission is trying, as I have said, to find out what is available, but it does rest with the teachers to say what they wish. I am perfectly sure that certain producers—interested in education—are most anxious to know what teachers want.

(a) Should the film be shown first without stopping? As far as I can gather teachers want several different things, or ought to want them if they knew, and probably teachers of different subjects and teachers in different types of schools want different things. Let me take particular examples. Dr. Consitt in teaching history evidently prefers to show the history film in silence and then discuss it afterwards. This may be the best method in teaching history where the action of the drama is the obvious and main thing and where continuity is desired; and yet it may not be the best method in the teaching of geography which deals with the stage on which the drama is played so that the attention of the children may have to be drawn to important matters which might pass unnoticed such as details of dress, buildings, etc., and for the examination of detail it is necessary to stop the film. Again, stopping the film may normally be the best method in the case of geography in the classroom and yet at the same time it may be better to show such a film as "Thirst" straight through in silence, even though its main value in the classroom is to teach geography. It is possible, therefore, that the build of the film, the shape it takes, will be different not only because some are geography films and some are history, but because different films are so constructed that they must be used in different ways.

(b) Should the film or the lesson be given first?

Assuming also that the film is to be shown whole and in silence, there is the choice of having the film first and building a lesson on it, or of giving a lesson first and then using the film as revision. Dr. Consitt states that her experiments do not show any

very decided advantage either way. I find, however, that taking the marks of her formal test of groups of pupils, the first of which group had the film first and the second the lesson first in 22 cases the group which had the film first scored most highly, and in 15 cases the group which had the lesson first obtained the higher marks. These tests were given immediately after the lessons. In tests given several weeks later 15 groups which had the film first scored most highly and 8 groups which had the talk first scored higher marks. There seems at least to be a suggestion that it is slightly better to show the film first, a procedure which on theoretical grounds might be expected.

(c) The film as part of the lessons.

There is, however, another possibility and frankly it is one that I favour myself, that of working the film into the body of the lesson, as I attempted to do in the lesson this morning. I have for 30 years been a strong advocate of the lantern or epidiascope but an opponent of the lantern lessons except on very rare occasions and I wish to use the film in the same way. The film is only one of the classroom instruments. I take my stand on the principle that unless the pupil is doing something he, or she, is not learning. I should be the last to suggest that when he is looking at a good film in intense silence for 15 minutes he is not working but my own experience of films is that if they are really of geographical value at all there is really too much in a film of 75 minutes to be assimilated by merely looking at it. The film of the Punjab village or the Shetland film each has too much in it to be taken in at once. (I would add, however, in parenthesis that whether you like it or not children are becoming film-minded and are much more alert to see things on a film than the older generation and the academically minded give them credit for.)

(d) What is the best length for teaching film?

If a teaching film is to be worked with, if there is to be something to analyse, something to synthesise and something to study, and not merely to look at, it seems to me that the film must be taken in smallish bits. As one wishes the children also to see the film whole at the end of the lesson there is the obvious implication that the film as a whole must be short. Dr. Consitt, thinking of a film run through in silence, also says "short", but by "short" she means 15 minutes. By "short," I mean something nearer 5. It is, I think, germane to point out that in the Eastman (Kodak) experiments each reel of 16 minutes lasted for three or four lessons; details of the lessons are not given, indeed they seem to have varied from classroom to classroom, but it is pretty evident that

the films were taken in small portions. I would again remind you also that in the picture theatre 7 minutes is the limit for the adult educational film. In the classroom I would far rather see a 5 minute film or lantern or epidiascope in each lesson than a 15 minute film or lantern or epidiascope in each third. Whether this is the better way or not it is at least evident that it is one way to use a film, and it follows that films to be used in this way must be different from those to be used in a 15 minute silent showing.

TEACHING OF GEOGRAPHY

THE RATIONAL WAY.

A. Booker, B. Litt. (Oxon), writes in "Education":—

Geography is a serious study in all of our Universities and most of our schools, but the content of the subject is still a matter of discussion and the treatment of it at all stages of education is an even more productive source of argument.

Gradually out of innumerable papers and lectures on the subject, we find a definition tending to crystallise, and this definition is becoming generally accepted as the necessary foundation of all geographical work. Geography is the study of the relationship between man and his natural environment. Upon this we may agree, but to some the main interest is likely to be in man, while to others it will be in environment. Let both sides flourish, for we need them both. But here our difficulties really begin and it is well to study these in some detail.

In our geographical work emphasis cannot be laid too often upon the fact that the data belonging to other spheres of study are fundamentally essential, but the geographer need not be expert in producing these data. He should leave this to the specialist in each subject. His business is to interpret the data at his disposal: and he is constantly asking for more.

THREE DIVISIONS

First, then, in our study of environment, we need to consider the three great divisions of (1) relief of the land; (2) climate; (3) vegetation. They must first be studied separately and then in their relation to each other. The relief of the land depends upon (a) the kind of rock of which it is composed; (b) tectonic movements; (c) sub-aerial erosion and other forms of denudation,

which immediately link it with climate. Upon wind and rain, ice and snow, depend the rivers which carve out the valleys; the sun scorches and splits the rocks; the winds carry particles and polish the bare stones across which they blow. Thus we are led to a consideration of the drainage of a land and to the effect that climate has upon vegetation. Here we find how dependent all living things are upon water and consequently we can understand nothing of the natural vegetable covering of the land without studying its supplies of heat and moisture and their seasonal distribution and duration. The interdepenence of all these three great divisions of relief, climate and vegetation is striking and forms one of the main bases of geographical work.

But it seems necessary in these days of detailed specialisation to emphasise the fact that the geographer need not be an expert in climatology and meteorology. He must take the findings of experts in these highly technical subjects and see how they affect his special study, man and his environment. Why should a geographer worry about the origin of a cyclone? He must deal with its effects. It seems especially unreasonable to expect school children to grapple with such a problem.

NO SPECIAL STUDY OF SCIENTIFIC ASPECTS

And so with other scientific aspects of his subject. He need not be a geologist. A lime-stone or clay has certain definite relations to land forms, soil and production, that the geographer must deal with in detail, but to him it does not matter whether the limestone is Jurassic or Magnesian. It is the very special type of landscape that any limestone gives rise to that is the source of interest to the geographer, and it is in the landscape that his study begins, that is, where that of the geologist ends. Nor need the geographer be a botanist in order to work out the importance of vegetation in its relation to man. Lack of space forbids further elaboration of this point, but it is an important one both in the training of the geographer and in the teaching of geography.

Then we turn to the second side of his studies, man. Here again the geographer must begin by drawing upon material provided by others: by the ethnographer and the archaeologist; by the historian and the sociologist; by the doctor and psychologist. When we ask what is it that the geographer is really dealing with, we find him studying the way in which man modifies or makes his surroundings or is modified or made by them. In one place he irrigates a desert and forces nature to serve him and we get, for instance, the settled agriculturist of Egypt; but in others the desert

is too strong for him (as yet) and we find the nomadic tribes of Arabia or Central Asia. Man cuts down forests recklessly and the hillsides become bare of soil and degenerate into stony deserts. Here is study for the geographer. Man's influence on his environment is not all to the good.

ITS VAST UTILITY

We find man increasing rapidly on the face of the earth; we find the need for food, for clothes, for houses, for transport increasing correspondingly. Here is work for the geographer and work of the highest value. For by his intensive study of the different landscapes and natural regions of the earth, he can suggest further developments, avoid past mistakes and seek out new ways of adapting man to his environment.

The lives of people in different parts of the world are now so largely dependent upon the economic development of the world as a whole, that the work of the geographer should be the basis of all attempts to promote international understanding and goodwill. Problems of food supply, of distribution of population, and of means of transport—these problems of outstanding national and international importance—these are integral parts of the study of geography.

And to make his results clear and intelligible, the geographer must use maps in every part of his work. Whether he need be a cartographer is very doubtful, but he must use maps with the familiarity of a surgeon using his implements or an artist his paints and brushes. Maps are an essential part of the language of geography.

Now that the main outlines of the world are known the work of the geographer is no longer that of the explorer of large areas, but he must still explore much of the surface of the earth intensively and thereby much will be gained. Vague generalisations, above all, must be avoided and the surest way is when more and more work is done on small areas in the study of the interaction of topography, weather, vegetation, occupations and products, the positions of towns and the distribution of population. The more we study the more we find small units offering endless scope for geographical work along these lines. And the result is a better understanding of our present-day problems, a readier sympathy with the problems of other lands, and we hope, some help towards the solution of these problems.

VIZAG HARBOUR CONSTRUCTION

PROGRESS OF WORK

It was in the year 1875 that Mr. E. C. G. Thomas, I.C.S., wrote a book under the caption "Vizagapatam—the port of the Central Provinces." At that period, Vizagapatam was already a port with considerable coastal traffic, and sailing vessels were able to enter the creek and lie in smooth water. The bar at the entrance, however, prevented steamers from coming into the creek. The silting up of the bar gradually put a complete stop to the coastal trade by sailing vessels, but it was not until 1892, when the East Coast Line was under construction, that Government seriously considered the question of building a harbour at Vizagapatam. When the Bengal-Nagpur Railway took over the northern section of the East Coast Railway terminating at Waltair, they obtained the sanction of the Government of India to investigate a scheme of harbour construction at Vizagapatam, and in 1914 they engaged the firm of Sir John Wolfe Barry and Partners who suggested dredging the creek and building an inside harbour on the site of an extensive swamp area. The Government of India finally decided to carry out the work from their funds. Funds were meantime voted for the acquisition of land that would be required for the construction of the harbour, and an area of some ten thousand acres was scheduled for this purpose.

PARVATIPUR-RAIPUR RAILWAY

At the same time, they reviewed the construction of a railway linking Vizagapatam with Raipur which is situated on the Calcutta-Bombay route and as the development of Vizagapatam as a first class port was dependent to a great extent upon this connection with the Central Provinces, it was considered essential that the completion of this line between Parvatipur and Raipur should be proceeded with simultaneously with the work of the harbour contruction. Thus, the opening of this line on March 31, marks the completion of one phase of this twin scheme. This new line runs through the western portion of the province of Bihar and Orissa and opens up a great tract of country which has not hitherto come under the influence of railways. The Port of Vizagapatam is roughly some 330 miles from Raipur in the Central Provinces, and is therefore some 180 miles nearer to the central part of India than any other seaport. The country lying to the west and northwest of Vizagapatam through which the new line runs is rich not only in field and forest produce but also in mineral wealth. Owing

to the paucity of communications and difficulties of transport, a great deal of the forest produce has not hitherto found its way to the coast, but the new line will, to some extent, modify the situation at once.

THE OUTER CHANNEL

The inland site available for the construction of the harbour is in most respects ideally suited to the purpose and the main difficulties which had to be faced when the project was taken in hand were the obstruction of the entrance channel by masses of rock and the dredging and maintenance of the sand bar which formerly closed the channel to all vessels except surf boats. The progress made to date on the clearance of the rock is such that the passage of the deepest ships likely to visit the harbour is now assured. Large quantities of rock have been dealt with in the last two years, by dredgers and by the use of explosive, and though there will be nothing to prevent the further deepening of the chanel as time goes on, the initial provision made of depth for ships of 28 feet 6 inches draft on the governing tide level is likely to meet the needs of the case for some years. The minimum width of channel to be provided is 300 feet.

The view which was favoured when the scheme was commenced, regarding the maintenance of the outer channel, was that there would be no very strong tendency for the bar, once dredged, to reform. An experimental channel was commenced toward the end of 1930 and the crest of the bar was entirely dredged away. The experience gained during the succeeding monsoon of 1931 showed that the early anticipations were not altogether justified and that the maintenance of the channel would present some difficulties and might necessitate measures with which it had been hoped to dispense.

DREDGING OPERATIONS

Dredging operations of this nature in the open sea have mainly to be carried out at Vizagapatam in the calm season between December and March, and it therefore became apparent that not less than two seasons of intensive effort would be required before the harbour could be opened to shipping with a prospect of maintaining the channel throughout the monsoon. The first of these two spells of work has now been brought to a successful conclusion. The opening of the harbour to traffic a year hence will be dependent upon its being possible to achieve equal results during the next calm season and upon the success of the efforts which will have

to be made to cope with accretions in the channel during the coming monsoon. Meanwhile, the question of additional measures to give protection to the channel is receiving consideration.

THE QUAY

The quay for berthing three ships is completed and is in use by lighters, which were brought into use after the bar was dredged. The Transit Sheds are also in use in connection with the present traffic of the Port. There is a certain amount of dredging to be done, in addition to that in the outer channel, in order to complete the berthing area, the Turning Basin and the Inner Channel, and this will be carried out at times when outside dredging is impracticable.

Large areas of land have been reclaimed for office sites and for industrial purposes, as well as for the needs of the harbour. The construction of an Electric Power Station is about to be taken in hand and orders are shortly to be placed for electric cranes and other equipment for handling manganese ore, as also for moorings and other features. The existing ferry across the entrance channel is being replaced by a modern ferry for passenger and vehicular traffic. The railway facilities necessary for handling the opening traffic are expected to be ready during the present year. A 1,500 horse power tug is being purchased with a view to completing the floating equipment of the harbour.

In general, every effort is being made to prepare for the entry of ships by the time the dredging operations have been sufficiently far advanced.—THE HINDU.

Man and Nature

A country is a reserve of energies whose origin lies in nature, but whose development depends upon Man. It is Man who by moulding the land to his own purposes, brings out its individuality. He establishes a connection between its separate features. He substitutes for the incoherent effects of local circumstances, a systematic concourse of forces. It is thus that a country defines and differentiates itself and finally becomes, as it were, a medal struck in the effigy of a people.

—*P. Vidal de la Blache.*

The Pyramid of Geography

To summarise at a glance this scheme of the aspects and objects of the geographical science, we may consider them as forming a pyramid, broad-based on the smooth-hewn blocks of mathematics, rising through tiers of firmly-laid stones from the quarries of the physical sciences, and the less sure products of biology and anthropolgy to the irregular courses of political geography and the rubble heap of commercial geography which caps if it does not crown the edifice. Here an extension of the metaphor may be permitted. The incoherent and shifting cap of the pyramid is not without its influence on the rest. As rain, filtering through a great piece of masonry, dissolves the mortar of the upper parts and redeposits it lower down, so the streams of economic interests have spread downwards through the whole structure of the geographical pyramid, binding it together. Commercial motives consolidate national life, accentuate racial differences, redistribute animals and plants, modify physical conditions, start investigations into the nature of the Earth, and even invade the solid groundwork of mathematics with practical suggestions.

—*Dr. H. R. Mill.*

News and Notes

We are glad to note that non-journal members of the Association appreciate the new experiment of sending them reprints of *News and Notes, Reviews and Books and Journals Received*, as they have otherwise no means of keeping in touch with the activities of the Association except casually through the newspaper. It is, therefore, decided to make it a permanent feature, and to add to it a *Correspondence column*, in which the doubts and queries of members can be answered. Those members who can afford to go in for the Journal will, of course, subscribe for it, as all the papers read before the Association are published in it *in extenso*.

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Hence, *back numbers* of the Journal have always a permanent value, as is evidenced by the frequent demands for them. In order to make them available for a larger number of people and to popularise the work of the Association, it has been decided to give the available copies of back numbers which are more than one full year old at half-price to non-members and quarter price to members. This concession will hold good only for a short time.

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After the Sixth Annual Meeting was over on 23-4-32, an ordinary meeting was held at the Teachers' College, Saidapet, when Mr. T. N. Muthusawmi, M.A., of the Engineering College read a paper on the *Geographical Evolution of India*, illustrated by slides, under the Presidency of Mr. T. R. Venkatrama Sastri, B.A., B.L. This paper is published in the present number of the Journal.

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Another paper included in this issue is the *Economic Geography of the Vizagapatam District* read by Mr. T. Appalanarasayya, M.A., at the Vizagapatam Branch of the Association under the Presidency of Mr. B. Venkatapathi Razu. Similar papers for other districts would be highly useful and interesting.

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The second ordinary meeting of the Association was held at 4-30 p.m., on Saturday the 30th July 1932 at the Teachers' College, Saidapet when Mr. K. N. Dikshit, M.A., Government Epigraphist delivered a lecture on "*Mohenjo-Daro and the Indus Valley Civilization*", illustrated by slides, under the Presidency of Prof. K. A.

Nilakanta Sastri, M.A. The substance of this lecture will be published in a later number of the Journal.

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The Inaugural Address of the Vizagapatam Branch of the Association for the current year was delivered at 5-30 p.m., on Saturday the 23rd July 1932 at the Medical College by Mr. I. Ramakrishna Rao, M.A., Ph.D., of the Andhra University College of Science, on *the Geography of the Universe,* illustrated by slides, under the Presidency of Prof. M. Venkatarangaiah, M.A. This address also will be published in a later number of the Journal.

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The next (October) issue of the Journal will be a special Conference number, and will contain a full report of the Proceedings of the Third Geographical Conference held at Madura in May last, including all the papers read on the various aspects of the Geography of the Madura District. In fact, it will be a kind of source-book for the Geography of the District. The price of it will be Rs. 2 for non-members and Re. 1 for members. Advance orders may be registered.

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The Fourth Geographical Conference will be held at Trichinopoly during May 1933, when papers on various aspects of the Geography of the Trichinopoly District will be read and discussed. The Local Branch is arranging for the formation of a strong Reception Committee for the conduct of the Conference. Members and others willing to contribute papers are requested to intimate about it to the Secretary as early as possible.

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Some of the branches of the Association such as those of Erode, Chittoor, Villupuram and Nellore have not been functioning properly; and they will be closed shortly, unless the members pay up their arrears and work up their branches to some kind of local activity.

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It is proposed to arrange for an Association Excursion for about a week or ten days to Mysore or Ceylon during the next Christmas holidays; and the cost all told may come to about Rs. 50, the railway travel being done in the third class. Members willing to join the trip are requested to inform the Secretary by the end of October 1932.

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The Diploma Course in Geography instituted by the University of Madras is being conducted by Mr. George Kuriyan, B.A., B.L., B.Sc. (London), who has been appointed University Lecturer in Geography. There are 33 students attending the class, which is being held in the evening hours at the Teachers' College, Saidapet.

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It is being increasingly recognized that the S. S. L. C. Syllabus in Geography is not after all so heavy as it was thought to be when there was not a sufficiency of trained teachers in the subject. Those that are now handling it feel that Part IV (Principles of Climate and Regions of the World) is mere revision work and posting up of the ledger, rather than any additional matter; and as such its deletion instead of lightening the burden would really make it heavy, for want of the required revision. It is hoped that the Revision Committee of the S. S. L. C. Board will not, in the attempt to lighten the burden, make the syllabus lop-sided, but lighten it in the right way after proper consultation.

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In the S. S. L. C. Scheme, Geography has been coupled with History; and it is given an hour's paper carrying only 40 marks. The Revision Committee will do well to rectify this blunder by giving the subject an independent status and a longer paper, say, of two hours, and raising its maximum proportionately. Meantime, we would like to point out, that the examiner can to a large extent undo the mistake even under present conditions, by adopting the new type questions—by putting a larger number of smaller questions requiring shorter and more definite answers. Even otherwise, we are glad to learn that candidates have instinctively discovered that answers in the Geography paper fetch them full and ready marks as in the Mathematics paper, which is not the case in the History paper. The realisation of this fact coupled with the adoption of the new type examination will go a long way to make the subject popular in spite of the low position which has been accorded to it in the scheme.

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In former times pupils were expected to draw their own outlines of countries and continents before they inserted any features which they were called upon to answer. But now-a-days, and very rightly too, they are supplied with outlines both for class study and in examinations. Printed outlines are somewhat costly, and equally costly are the various instruments used for the purpose such as the Mapograph and the Kylograph. We pointed out

in an earlier number of the Journal how a District Scout Organiser in the Northern Circars got easily prepared as a spare time activity of his scouts rubber stamp outlines of countries and continents by sticking fine pieces of rubber to thin dealwood planks on which reverse outlines of continents were drawn. The Geography Master of the Board High School, Wandiwash does it in a different way. There is a small school press, managed by a few boys who are trained to it that print the daily weather chart of the school and do other little printing jobs of the school. Leaden sheets of the requisite size are purchased on which the pupils themselves carve the reverse outlines of countries and continents, from which they print the outlines required for their use.

Reviews

Geography of the Madras Presidency (Telugu) by N. Subrahmanyam. (Longmans, Green & Co.). Price 6 annas.

This is the Telugu edition of the Tamil book by the same author reviewed in a back number of this Journal (Volume VI, No. 3-4.) We have only to add to the opinion already expressed about it that the language of this version is equally clear and simple.

A Pictorial Atlas of Indian History. By K. Srinivas Kini and U. Bhavani Shanker Rao, (Oxford University Press.) 1932. Price Re. 1-4-0.

The authors of this Historical Atlas have succeeded in producing very much more than what is indicated by its title; for, the volume is really a pupils' *companion* to the study of Indian History. It is divided into 16 parts (an introductory one and 15 epochs) in each of which is given a connected outline of each of the periods in its essence, and illustrated by means of maps, pictures, time-lines, coins, etc. Of maps there are 32; and of pictures, which include portraits of great men and kings, buildings, monuments, etc., there are twice that number. The print and get-up are neat and attractive; and the price modest for the value. The book can be strongly recommended for use by High School pupils, who will find the subject is made thereby interesting and enlivening.

A Geography of the World (Tamil) Book II Part II: *Eurasia* by S. A. Subrahmanya Ayyar and T. S. Anantanarayanan (T. G. Gopaul Pillai.) Price Re. 1-4-0.

The earlier parts of this book were reviewed in Volume VI No. 3-4 of this Journal. As in the earlier parts, the language is clear and simple, and the book is well illustrated with pictures, maps and charts. In spite of the attempt to present the subject in a modern way there is an over-emphasis on mere facts as such. Statistical data regarding population, temperature, rainfall and economic products in the shape of figures and charts have been appended towards the end. This is one of the very few books on Geography, written in Tamil according to the S. S. L. C. Syllabus.

Elementary Geography: Udyarpalayam Taluq by M. S. Paul (Teachers' Publishing House, Madras.) Price 4 annas.

This is a children's book on the local geography of Udayarpalayam Taluq, written by a keen student of Geography and an experienced teacher of the subject in quite an interesting way. It is refreshing to find that, unlike the usual books of the kind which are generally compilations, the author has brought to bear his personal knowledge and local experience of the area treated. The language is very simple and clear, and the book is illustrated with a good number of pictures and sketch-maps, and printed in bold and attractive type. We would, however, like to point out that the plan of treatment is a little too logical for children for whom it is intended instead of being descriptive as in English and American books of the kind.

Rock-Cut Temples around Bombay by Kanaiyalal H. Vakil (D. B. Taraporevala Sons & Co., Bombay). 1932. Price Rs. 3.

This is a neat little hand-book of the Rock-Cut Temples at Elephanta, Jogeshwari, Mandapeshwar and Kanheri, and forms a companion volume to the author's earlier work "At Ajanta". The book is profusely illustrated with fine pictures on art paper both of the sculptures and of the architectural features of the cave temples. But it is very much more than a mere hand-book, as a successful effort has been made to bring out the artistic values and interpret the inner meaning of the sculptures instead of a mere bald description of them. In so interpreting, Sanskrit literature has also been laid under contribution. By this work, Mr. Vakil has drawn the attention of visitors to Bombay to these interesting spots which are not perhaps as well known as Ajanta.

Books and Journals Received

Geography of the Madras Presidency (Telugu) by N. Subrahmanyam, (Longmans, Green & Co.).

A Geography of the World: Book II, Part II: Eurasia (Tamil) by S. A. Subrahmanya Ayyar, and T. S. Anantanarayana Ayyar, (T. G. Gopaul Pillai, Trichinopoly).

Secondary School Geography by L. D. Stamp, (Longmans Green & Co.).

Rock-Cut Temples around Bombay by K. H. Vakil, (D. B. Taraporevala Sons & Co.).

Geography of Udayarpalayam Taluq by M. S. Paul, (Teachers' Publishing House, Madras.)

The Indian Literary Review: May 1932.

Wealth and Welfare: April 29 to June 24, 1932.

The Geographical Journal: May, June and July 1932.

The South Indian Teacher: May, June and July 1932.

The Educational Review: May, June and July 1932.

Geography: June 1932.

Canadian Geographical Journal: June and July 1932.

The Indian Educator: March and Conference Number, 1932.

Journal of the Travancore Teachers' Association: March 1932.

Journal of Oriental Research: January-March and April-June 1932.

The Geographical Review (New York): July 1932.

The Karnatic Historical Review: September 1931.

The Mythic Journal: July 1932.

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    „ VII. Australia and New Zealand. By L. S. Suggate, M.A., Rs. 4-2-0.
12. A PICTORIAL ATLAS OF INDIAN HISTORY, with Outlines and Time Charts. By K. Srinivasa Kini, B.A., L.T., and U. Bhavani Shanker Rao, B.A., L.T., Re. 1-4-0.

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